

# GENERAL DYNAMICS

## ASTRONAUTICS EDITION (OFF-SITE)

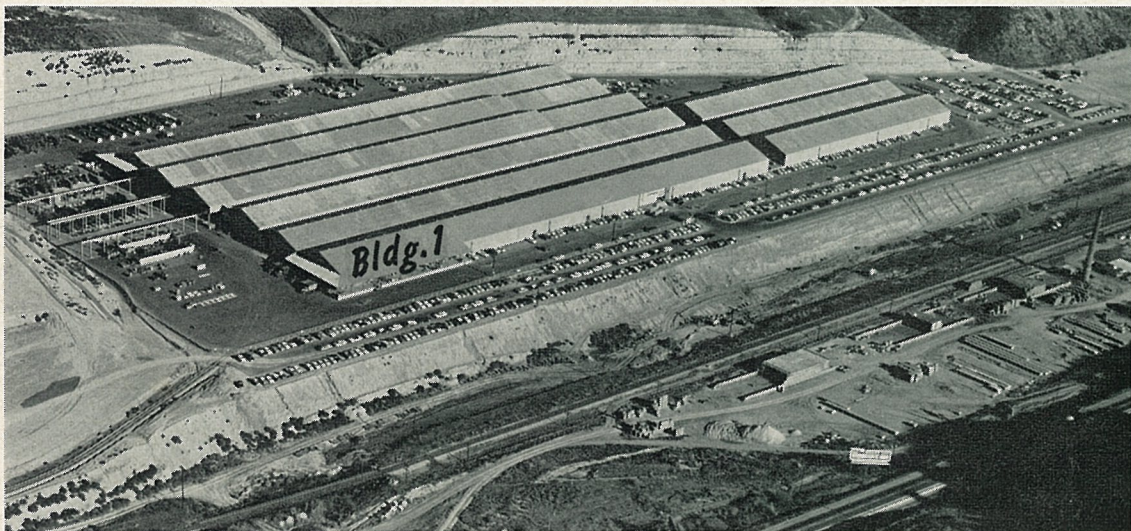
# NEWS

Vol. 16, No. 1

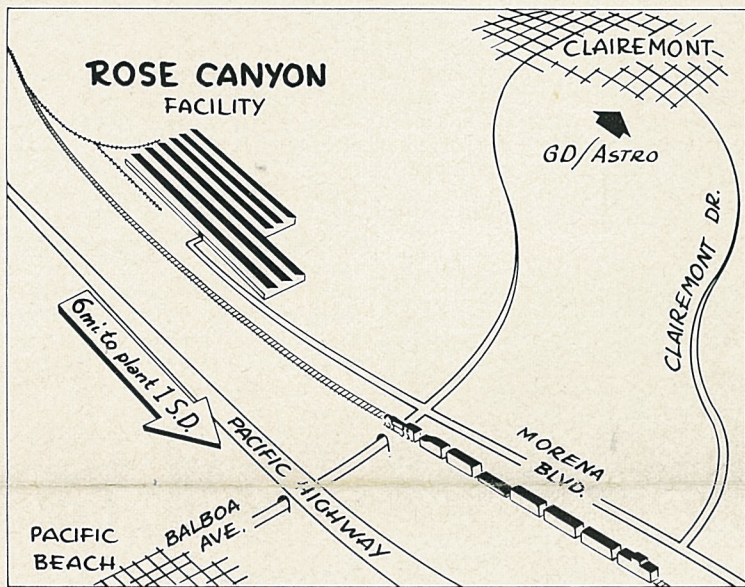
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Wednesday, January 9, 1963



ROSE CANYON—Although taken several years ago, photo shows Rose Canyon facility much as it appears today, except that brickyard in foreground has since moved. Below is sketch pinpointing Rose Canyon location. Traveling from GD/Astronautics, route through Clairemont is most direct to reach facility.



## Atlas-Agena Transferred to Lewis Center

Transfer of the Atlas-Agena program to Lewis Research Center, Cleveland, Ohio, was announced last month by National Aeronautics and Space Administration (NASA).

Change-over is expected to be complete in about three months.

The move concentrates direction of both NASA's Atlas-based space science vehicles, Agena and Centaur, at Lewis Center. Centaur was transferred to Lewis control last September.

Agena was formerly administered by Marshall Space Flight Center, Huntsville, Ala., which will now concentrate wholly on Saturn vehicle development.

NASA has used Atlas-Agena for Ranger lunar probes and Mariner interplanetary spacecraft, and has scheduled the combination to launch its orbiting geophysical and astronomical observatories (OGO and OAO).

Responsibility for the Atlas-Agena target vehicle in the Gemini program remains essentially unchanged under Manned Spacecraft Center, Houston, Texas.

Overall Agena program management is in NASA's Office of Space Sciences directed by Dr. Homer Newell. Dixon Forsythe is Agena program manager.

At Lewis Center, a separate Agena project office will be established under Dr. Abe Silverstein, director, and Bruce Lundin, associate director for development.

## Buckley To Teach Automation Class

Daniel Buckley, GD/Astro design engineer, will teach a course in automatic controls (automation) opening Jan. 28 at Kearny Mesa High School under sponsorship of San Diego City College.

The class meets from 6:30 until 9:30 p.m. each Monday. Registration is possible at the San Diego Evening College, 14th and Russ Blvd.

## Guest Economist To Speak Tonight

Economist Tom Lantos will be guest speaker at the meeting of General Dynamics/Astronautics Management Club tonight (Jan. 9) in the Caribbean Room, El Cortez Hotel.

A social hour will start at 5:30 p.m., with dinner at 6:30. Tickets cost \$3 per person.

Dr. Lantos will discuss the European Common Market, its operation and how it affects the American economy.

Tonight's meeting is sponsored by operations department.

## GD/Astro's Role in Cuba Crisis Earns High Air Force Praise

Recognition of the contributions made by General Dynamics/Astronautics during the recent Cuban crisis has been received in the form of two special letters addressed to President J. R. Dempsey.

Maj. Gen. Clyde H. Mitchell, commander, San Bernardino Air Materiel Area, stated he wished to share a personal message recently received from Gen. Mark E. Bradley Jr., commander, Air Force Logistics Command, which said:

"At the Commanders' Conference at Air Force Headquarters, all Air Force commanders involved in the recent Cuban affair were universal in their praise of the fine accomplishments by you and your people. The Vice Chief stated that never before has the logistics side of the house been ready and waiting while the rest of the folks got ready. I commend you and wish you would pass this commendation to your people. The future may be tough, but with this kind of performance we have little to fear."

Gen. Mitchell added: "It would please both Gen. Bradley and myself if you would pass these words

along to those devoted employees in your industrial complex which made this possible. The ability of your organization to respond to our needs played a vital role in achieving the excellent logistics posture which was so evident. All of us at SBAMA are proud of your contribution to this joint venture."

A second letter was written by Col. John F. Harris, deputy for Atlas, Ballistic Systems Division, which said:

"Numerous laudatory comments have reached this headquarters on the high degree of cooperation rendered during the Cuban crisis. The speed with which General Dynamics/Astronautics and their subcontractors responded and accomplished tasks . . . is highly commendable . . .

"The results obtained were exemplary through the initiative of your company personnel . . . Engineers, technicians, management personnel, regardless of union affiliations and all other normal relationships, chose to forego their rights, privileges and working agreements to accomplish the required tasks in the shortest possible period of time."

## Last of Silo Launch Complexes Handed to SAC at Plattsburgh

PLATTSBURGH AFB — Atlas base activation was successfully completed here last month with delivery of the final 12 silo launch complexes under checkout to the Strategic Air Command.

Ceremonies marking the turnover drew some 181 ranking dignitaries and news media representatives Dec. 18-19.

Mentioned frequently in speeches and news releases was the time element involved in this

phase, base activation, as well as the entire Atlas development program. It was pointed out that eight years ago Atlas was little more than an idea on a drawing board; contracts to General Dynamics/Astronautics were issued for Atlas development late in 1954; and the initial test flight was made in 1957.

Maj. Gen. Marcus F. Cooper, deputy chief of staff, systems, (Continued on Page 2)

## Material Depts. Shift To Rose Canyon Will Trigger More Moves

A San Diego landmark, General Dynamics/Convair's Rose Canyon facility off Highway 101, will become new "home" of General Dynamics/Astronautics material departments later this month.

GD/Astro personnel will occupy the entire 43,000 sq. ft. of office space in Bldg. 1, while GD/Convair will retain warehouse portions of the facility.

At present, some 250 GD/Convair employees are located at Rose Canyon, representing purchasing, material control, quotes and services, accounting, Navy inspection, quality control, salvage, records, industrial engineering.

Plans call for part to vacate the facility by mid-month, probably making an interim move to Bldg. 19, prior to final relocation.

GD/Astro material department groups will start moving into Rose Canyon about Jan. 22, and are expected to be fully installed by the end of the month.

Shift to Rose Canyon is the first of several moves planned for GD/Astro groups during early months of 1963. Purpose is to strengthen communication lines by drawing groups into physical proximity. Emphasis will lie on those departments previously centralized administratively through project organizations.

Nearly 8,000 employees are involved.

By the end of March the following consolidations will have taken place:

GD/Astro material departments will center at Rose Canyon, and Atlas weapon system (AWS) groups will locate in Bldg. 3 at Kearny Mesa (Plant 71).

Product support departments will occupy space in Bldg. 51 at Plant 1. At Plant 71, GD/Astro's space launch vehicle (SLV) project will center in Bldg. 33, as will most electronic projects.

Changes are also in store for Bldg. 51 at Plant 1. Here, nearly 1,000 GD/Astro employees will occupy the entire third floor. These primarily will be support publications (Dept. 322) employees moving in from Plant 2.

General picture to result from other moves of GD/Astro departments planned during the first quarter of 1963 is reflected below, although additional moves may be forthcoming:

**PLANT 71 (MAIN PLANT)**  
**BLDG. 1**  
First Floor: Existing industrial rela-

tions groups will remain, with exception of industrial security (Dept. 130-1). This section will move to Bldg. 2, and their quarters will be occupied by engineering personnel (Dept. 130-9).

**Second Floor:** Division staff, and advanced product planning (Dept. 105).

**Third Floor:** Air Force office.

**BLDG. 2**  
Security (Dept. 130-1) will occupy space to be vacated by material and communication department (editorial, community relations and arrangements) groups. Communication units will move to new quarters in wings of the building.

**BLDG. 3**  
First Floor: Contracts (Dept. 110); master scheduling (Dept. 152) moving in from Bldg. 26; change administration (Dept. 151) moving in from materials building (92).

Floors 2, 3, 4, 5: Atlas weapon system.

**BLDG. 4**  
Some minor relocations within building. Engineering laboratories will move in from Bldg. 33.

**BLDG. 5**  
Mezzanine: Material control (Depts. 831, 832); tooling; production control (Dept. 222).

Under mezzanine: Quality control (Dept. 141); applied manufacturing research and process development (Dept. 290). Other production departments will remain as at present.

**BLDG. 33**  
Space launch vehicle; electronics; electronics manufacturing; electronics laboratories.

## Jan. 18 Deadline On Nominations For ARA Queen

With preliminary judging slated late this month, nominations of candidates for GD/Astronautics Recreation Association's 1963 queen contest are beginning to flow to employee services outlets throughout GD/Astro.

Employees are eligible to nominate other GD/Astro employees, employee wives, or Air Force, NASA and permanently assigned associate contractor personnel or their wives, as candidates.

Nomination deadline is Jan. 18. Application blanks and contest rules are available at all employee services outlets. Each candidate must be sponsored by an employee in the groups listed above, and must agree to contest rules and to participate in all ARA events before and after judging.

On Jan. 30, candidates will appear before members of ARA Employees' Council and AR Aiders from throughout the plant, who will choose 15 finalists.

Final selection of a queen and her court of four attendants will be made by a panel of four outside judges at the ARA-sponsored fashion show March 20.



EARLY ENTRANTS—Among first candidates to accept nomination in ARA's 1963 queen contest are Sheila Copeland, Dept. 851-2, left; Betty Freeman, Dept. 558-3; and Joyce Brink, Dept. 811-3. Explaining contest regulations at right is Sunny Dark of Astro AFPRO, program co-chairman.



## Explorers To Offer Family Membership

Plans for a year-long membership drive aimed at doubling present participation have been mapped out by leaders of the ARA Explorers Club.

In seeking new members the club will stress family participation in camping, hiking, exploration, survival training, etc. Special emphasis will be placed on weekend trips to little-known areas, ghost towns, etc.

Club meetings are held the third Wednesday of each month at 7:30 p.m. in the ARA Clubhouse. On Jan. 16, Lou Sahfran will present a special color movie on Baja California explorations.

Information on the club is available from Commissioner Herman Reichert, ext. 2607, or President Paul DuPre, ext. 4449.

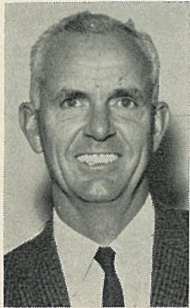
## Teen Club to Dance, Live Music Jan. 19

Live music and a casual atmosphere will be featured at ARA Teen Club's dance 7:30 to 11 p.m., Jan. 19 in ARA Clubhouse.

Commissioner John Hess has suggested sport clothes as appropriate for the event.

Admission is 25 cents per person, and each club member may bring a guest.

## Log Book Entries



Cecil Flowers, GD/Astro Dept. 671-1, received 25-year emblem recently.

## Service Emblems

### MAIN PLANT

Service emblems due during the period Jan. 1 through Jan. 15:

Thirty-year: Dept. 758-0, K. R. Carson. Twenty-year: Dept. 250-2, H. F. Jennings; Dept. 378-4, W. J. Svada; Dept. 402-1, L. J. Whisler; Dept. 403-1, R. E. Ashe; Dept. 451-0, R. H. Richards; Dept. 580-6, Victor Hudson; Dept. 634-0, L. E. Munson; Dept. 641-1, J. C. Burke. Fifteen-year: Dept. 101-1, Evelyn L. Stout; Dept. 130, J. T. Mize, Ellen V. Sellars; Dept. 144-2, J. A. Gilardo; Dept. 222-1, S. E. Cleghorn; Dept. 401-5, J. B. Lowell, K. E. Smyth.

Ten-year: Dept. 140-2, Olga Naill; Dept. 222-2, A. C. Bove; Dept. 322-8, T. B. Snellings Jr.; Dept. 362-3, V. D. Pippin, C. G. Stevenson; Dept. 365-1, Belva Garcia; Dept. 390-2, D. M. Brownell; Dept. 401-2, R. L. Denmark Jr.; Dept. 454-0, H. S. Hagen; Dept. 556-1, J. E. Leib; Dept. 662-4, C. W. Arnott; Dept. 758-0, Raymond Szemett; Dept. 959-0, R. D. Kesler.

### LINCOLN AFB

Fifteen-year: Dept. 616-9, L. A. Peister.

## Births

### MAIN PLANT

HUNT — Daughter, Tanya Louise, 7 lbs., 12 oz., born Nov. 16 to Mr. and Mrs. Ron Hunt, Dept. 567-7. Grandfather is Bill Hunt, Dept. 832-1.

LEPPER — Daughter, Darcie Ruth, 8 lbs., born Dec. 4 to Mr. and Mrs. Darwyn R. Lepper, Dept. 759-0.

## Deaths

### MAIN PLANT

ARNETT — Robert J., Dept. 322-5. Died Dec. 15. Survived by wife, Violet.

BERRY — John L., Dept. 759-0. Died Dec. 12. Survived by wife, Martha.

LONEY — Joseph J., Dept. 142-5. Died Dec. 18.

### AFMTC

CARPENTER — Edward L., Dept. 571-3. Died Dec. 17. Survived by wife, Mary.

### DYESS AFB

MASON — Richard A., Dept. 618-2. Died Dec. 17. Survived by wife, Sophia.

# General Dynamics NEWS

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## Moose Named Traversi Aide

Two new executive appointments were announced at General Dynamics/Astronautics last month by President J. R. Dempsey.

H. E. Moose was named assistant to F. J. Traversi, vice president—administration, and J. S. Randazzo, formerly assistant to the director of material, was appointed manager, subcontract management.

Moose served as Air Force Plant Representative at GD/Astro since 1959. He retired recently from military service as a colonel.

A native of Pennsylvania, Moose is an aeronautical engi-



H. E. Moose

J. S. Randazzo

neering graduate of Purdue University, and holds a master's degree in industrial engineering from Stanford University. His military service dates from 1935.

Randazzo was born in Rochester, N.Y. He served in the Army from 1935 to 1958, attaining the rank of major.

Following work with the National Security Agency, Washington, D.C., he joined GD/Astro in 1961 and served in material department posts and as material project administrator.

## 'Fatigue Inadequacy' Subject of Article

"Correcting Fatigue Inadequacy," is title of an article by a General Dynamics/Convair fatigue research specialist which appeared recently in a British magazine.

The article, authored by Clarence R. Smith, was carried in the November issue of Aircraft Engineering, published by Dunhill Publications Co., London, England. Based on Smith's fatigue theories, it explains principles for determining future stress requirements on basis of information obtained from past structural failures.

## Discount Offered On All Star Game

Employee services outlets at Astronautics now have available free discount coupons good for \$1 savings on tickets to the American Football League's All Star game Jan. 13 at Balboa Stadium.

When exchanged at Charger ticket offices, the coupons reduce regular \$5, \$3.50 and \$2.50 tickets by \$1 each.

In addition, parents of youngsters under 14 years of age may purchase adjoining seats in corresponding price ranges for only \$1 each.

The All Star tilt pits outstanding players from Eastern and Western Division teams of the American loop in the final game of the year.



SIGNED—President J. H. Famme of GD/Convair (seated) affixes signature to formal contract, amounting to over \$6 million, with NASA for design and manufacture of Little Joe II launch vehicles in ceremony at Manned Spacecraft Center, Houston, Texas. Standing (left to right) are S. J. Harris, GD/Convair contract manager for Little Joe II; W. W. Petynia, Little Joe project officer (MSC); G. J. Mehailescu, contract negotiator (MSC); C. D. Sword, Apollo procurement chief (MSC); Dudley Digges, GD/Convair director of contracts; J. B. Hurt, Little Joe II program manager at GD/Convair; and J. M. Fitzpatrick, General Dynamics representative at Houston.

## Last of Silo Launch Complexes Handed to SAC at Plattsburgh

(Continued from Page 1)

Air Force Systems Command, summed up when he said:

"In the relatively short span of eight years and despite many obstacles, this program has been completed ahead of the original schedule and with a significantly greater force capability than that established at the outset of the program."

It was also pointed out that delivery here of the final silo installations came just four and one-half years after ground was broken for the first of the all-operational bases, Warren AFB.

The silo installations delivered here, plus their supporting service facilities, bring to 72 the number of such installations turned over to combat crews since the initial series "F" or silo base was finished just four months ago at Schilling AFB. Between the two, deliveries of similar facilities have been made at Lincoln, Altus, Dyess and Walker Air Force Bases.

Now deployed across the nation in a variety of launch complexes are 129 Atlas weapon systems. They are in the hands of 13 different Strategic Missile Squadrons of the Strategic Air Command.

Lt. Gen. Joseph N. Nazzaro, commander of SAC's Eighth Air Force; Brig. Gen. Winton R. Close, commander, 820th Strategic Aerospace Division; and Col. Richard W. Beck, commander of the 556th Strategic Missile Squadron, were key SAC representatives taking part in turnover ceremonies here.

In addition to Maj. Gen. Cooper, Col. Calvin W. Fite Jr., SAT-AF commander here, and Col. John Harris, Atlas program di-

rector, BSD, were key Air Force Systems Command representatives.

General Dynamics/Astronautics was represented by W. L. Van Horn, vice president and program director—Atlas weapon system; P. M. Prophet, director of base activation; Karel Bossart, technical director; E. J. Huntsman, manager of "F" series base activation; and Walter H. Dunn, Astro's operations manager here, along with C. R. Jackman who has filled in during final operations as base manager after Dunn returned to a new post at San Diego.

Also taking part were key civic leaders from New York and Vermont as well as the city of Plattsburgh.

## Stanley Heads AIPE Chapter

W. J. Stanley, manager of plant engineering at General Dynamics/Astronautics, has been elected president of the newly formed San Diego chapter, American Institute of Plant Engineers (AIPE).

AIPE is an organization of plant engineers, designed to assist members in gaining and maintaining leadership in their field, and to advance the professional standing of plant engineering.

The San Diego Chapter, listing 30 charter members, meets on the last Wednesday of each month. Membership includes plant engineering officials from major area military establishments and San Diego industries.

Included among charter members are GD/Astro's R. D. Leonard, R. W. Billmire and D. E. Merriam (all Dept. 250); Maurice Parson (formerly Dept. 250); and Carl Gourley of GD/Convair.

## CITY COLLEGE PLANS IN-PLANT CLASSES

Six San Diego City College courses will be offered at General Dynamics/Astronautics during the spring semester opening Jan. 28. All meet after regular working hours in Bldg. 17 at the main plant.

Employees may register by contacting Gloria, ext. 1935, in educational services (Dept. 130-3). Enrollment will be conducted at first class sessions.

Meeting Mondays and Wednesdays, 4 to 6 p.m. in Room 1 is Blue Print (X80) instructed by Lloyd Edwards, while Advanced Blue Print Configuration under Bob Gruner meets at that time in Room 6.

On Tuesdays and Thursdays, Electronics (45) meets 4:30 to 7 p.m. in Room 1 with instructor Herm Reichert, while Electronics (46) taught by Frank Vanlandingham meets 5 to 7:30 p.m. in Room 3.

Mike Bock will teach Optical Tooling from 4 to 6 p.m., Tuesdays and Thursdays in Room 6, and William Stewart will instruct in Technical Writing in Room 2 from 5 to 7 p.m.

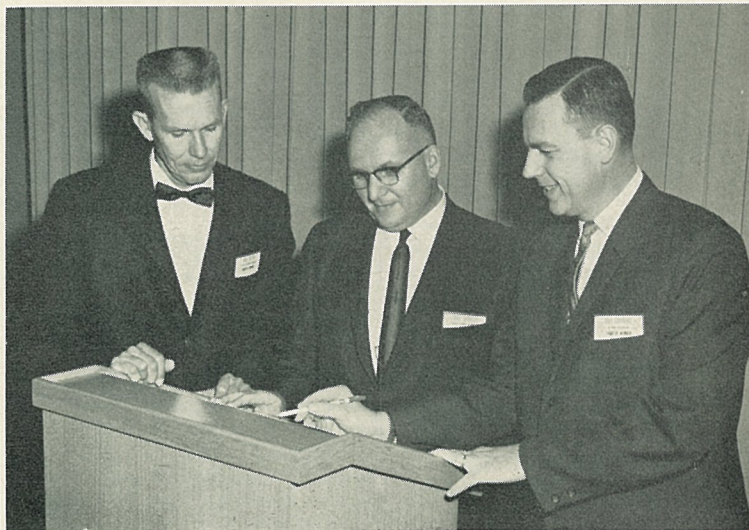
Fee is \$1.50 for a student activity card.

## 'The Longest Day' Discount Available

Discount tickets to Darryl F. Zanuck's "The Longest Day" playing at Loma Theatre, 3150 Rosecrans, are now available to GD/Astronautics employees at employee services outlets.

Tickets are for reserved orchestra seats at the 1:30 p.m. matinee performance, Jan. 27. Employees may purchase them for \$1.60 each—a 20 per cent discount off regular price.

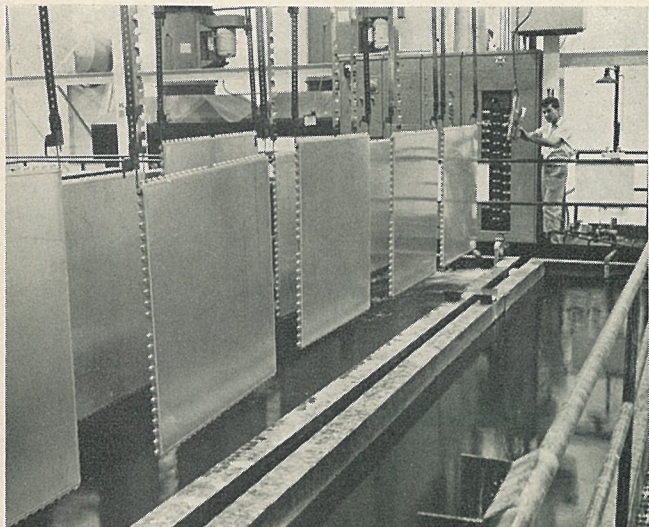
Over three hours in length, "The Longest Day" concerns the World War II Normandy invasion. Its cast lists 42 performers in star billings.



KICKOFF—W. J. Stanley, GD/Astro manager of plant engineering, center, discusses new chapter of American Institute of Plant Engineers, of which he is president, with Bob Foster, left, NEL, chapter vice president, and Ray Colbert, NAS North Island, secretary.

Save Materials—Don't Throw Your Job Away





**TOUGH MATS**—In center shot, C. L. Jackson, SATS mats program manager at GD/Convair (right), and P. J. Fitzgerald, art and editorial supervisor, examine first copy of brochure on airfield matting now going to potential customers following successful tests of new-type aluminum core landing matting. At left, test specimens

hang like "washing" on a line as they are moved over alodine tanks for dipping into protective solution. In photo at right, GD/Convair crew stands knee deep in mud as they lay panels during tests on soggy terrain. GD/Convair mats recently passed severe certification tests without failure.

## Successful 'F' Launches Climax AF and Astro Blue Suit Training

CAPE CANAVERAL — Five consecutive successful launches of series "F" Atlas missiles from this installation by a special Air Force unit has climaxed an unusual training schedule.

Called the Blue Suit Training Program, the effort dates from February, 1961.

Involved were 14 Air Force officers, 129 airmen and three civil service engineers under the supervision of Maj. Jack F. Pierce, chief of Atlas Operations Section, 6555th Aerospace Test Wing. Capt. Robert L. Borland served as test conductor.

Playing key roles in the effort were General Dynamics/Astronautics engineers and technicians headed by John E. Hughes, launch operations manager for the Atlas weapon system project here, as well as members of associate contractors in the Atlas program.

Success of the Blue Suit program was heralded as early as December, 1961, when GD/Astro and 6555th ATW personnel teamed to set a record by launching two missiles (5-F and 6-F) in only 18 days.

Blue Suit training began at the onset of series "F" research and development efforts here. Air Force trainees were closely associated with Astro and contractor units through on-the-job experience while missile systems were being tested and improved.

Following their own training, key members of the military unit served as instructors for other

Air Force personnel. Throughout the program, special courses were conducted by contractors.

Training in launch operations progressed from a time when Air Force personnel acted only as observers, to the point where they actually took over key operations involved, and GD/Astro men remained on hand only to give technical assistance.

On Aug. 13, 1962, Air Force men manned key jobs for the successful launching of Atlas 7-F. This was followed by successful launchings of Atlas 8-F and Atlas 14-F during September and October, Atlas 16-F in November, and Atlas 21-F on Dec. 5.

Series "F" research and development flights, including those involving the 6555th Aerospace Test Wing crews, were made from Complex 11 here.

### Academy Acclaims Dempsey, Bossart

General Dynamics/Astronautics President J. R. Dempsey and K. J. Bossart, technical director, were gold plate recipients at the Academy of Achievement banquet in San Diego late last month.

The two were honored for scientific achievement in space science and missileery. They were among 83 leaders in all phases of science and the arts from throughout the U. S. and Latin America to be honored by the Academy.

### Social Security Tax Deduction Increased

Effective Jan. 1, increased Social Security taxes took a bigger bite of General Dynamics' pay checks.

Deduction is now 3% per cent of the first \$4,800 in wages—an increase of one-half of one per cent over last year's 3% per cent tax. In practice it means each employee earning \$4,800 or more will now pay \$174 in Social Security taxes during the year instead of the previous \$150 maximum. General Dynamics contributes a like sum.

Increase in the tax is necessary to cover increased costs of retirement and survivor's benefits which became effective last year.

## Firm 'Go-Ahead' Given To Build Test Field With New Type Mats

General Dynamics/Convair has received firm go-ahead on production of matting for one test field for the Navy as a result of highly successful tests on a new aluminum core mat, designed and fabricated by GD/Convair.

In making the announcement, President J. H. Famme said that production under the initial contract for the test Small Airfield for Tactical Support (SATS) will start within a few months on the automated assembly line now being installed.

Portable matting for airfields

to be used by Marine jet fighters and close-support aircraft has been developed under study contracts from the Naval Air Materiel Center, Philadelphia, Pa., since spring of 1961.

First research culminated in a mat with a pressed wood core, weighing 159 lbs. Continued development, aimed at reducing that weight, has resulted in the present all-aluminum mat, lightening the mat assembly by 52 pounds.

Both the original mat and the lightweight aluminum mat have proved that they can withstand impact loads of modern fighter aircraft under the most critical conditions, said C. L. Jackson, SATS mats program manager at GD/Convair.

Both types successfully passed all roll tests at the Waterways Experimental Station (U. S. Army Corps of Engineers) at Vicksburg, Miss. Successful results of tests on the aluminum-core type were announced late last month.

"These tests are of the severest type, designed to eliminate any but the very best mat systems," stressed Jackson. "Ours completed all without a single failure. To our knowledge, this achievement is unmatched at this time!"

The basic all-aluminum mat is 4x4 feet in dimension, with an aluminum die cast case sandwiched between two aluminum skins. Connector bars interlock the panels into any size airfield. The basic 1½-in. thick mat can be altered in thickness and in core material to suit specific requirements.

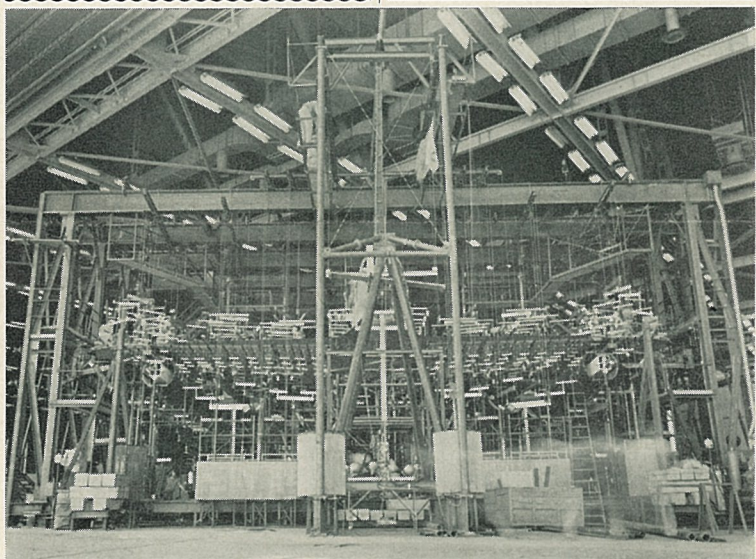
This mat concept, with its non-directional structure, permits laying an airfield from many points at the same time, once the original line of mats has been established.

"With one simple tool, which is used to carry, position, and lock the mat into the airfield, any mat regardless of location, can be removed from an airfield and replaced in approximately two minutes," Jackson pointed out. "No welding, bolting, or riveting is necessary."

The aluminum mats will be assembled on the mat-a-minute line, now in final stages of completion in GD/Convair's Bldg. 2. The automated facility, or "translator" line, now geared for immediate production on the original wood core mat, will be adapted for assembly of the aluminum type by the time the die-cut cores are available, said Jackson.

"From an analysis of the potential market, there is considerable interest in this matting, both by the Marine Corps and other military agencies, both foreign and domestic," he continued.

Use of the matting certainly is not limited to portable airfields alone. They would be just as suitable for beach surfacing from vessel to shore, suspension bridges, heliports, floating docks, portable pontoons, bridge decks, points out a GD/Convair sales brochure now going to all users, and potential customers.



**MORE OF SAME**—Cyclic-fatigue testing of B-58 Hustler in Bay Area "torture chamber" continues under new contract.

## Cyclic-Fatigue Testing of B-58 Extended by New AF Contract

A \$3.6 million contract for extension of cyclic-fatigue testing of the B-58 Hustler was awarded GD/Fort Worth by the U. S. Air Force recently.

The new testing will follow completion of the current series of fatigue tests on B-58 No. 29 in Bay 4 of the Development Hangar in about three months. The additional cyclic fatigue tests are expected to be completed in about 42 weeks.

"A 'lifetime' of flying and taxiing has been simulated in this current series," said H. D. Nolan, group engineer structural test laboratory. "Intent of the new series is to effectively duplicate this effort."

Testing is done by a series of whiffle trees attached to hydraulic cylinders, which are in turn linked with a nearby network of load programmers.

In simulating various gust conditions, different pressures are applied to different parts of the plane.

Furnishing load information for the new test series will be C. D. Little and J. E. Hejl, structures supervisors in the B-58 project group.

Nolan said that an accumulation of data through flights by B-58 Nos. 7 and 42, customer experience, and the first series of fatigue tests should provide more realistic data for the program.

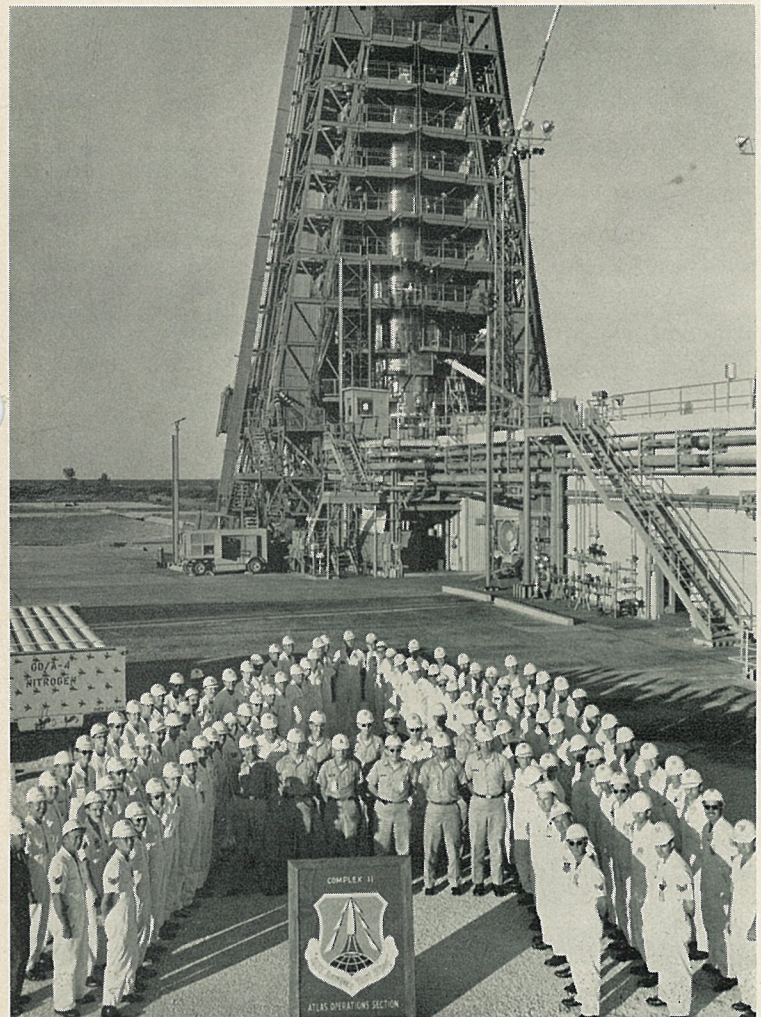
"We anticipate some failures during this second cycle," Nolan said, "but this is really the purpose of such testing: to enable us to detect and correct trouble areas before they occur in flight."

In addition to the stripped-down structure of B-58 No. 29, loads programs will also be applied to various B-58 components in the bay area, including: a half-wing with structural variations from airplane 29; vertical fin; pod hook area; and forward fuselage.

"Modern demands on high-performance supersonic aircraft—including such maneuvers as low-level flight—make it mandatory that the Air Force be able to predict structural performance," Nolan said.

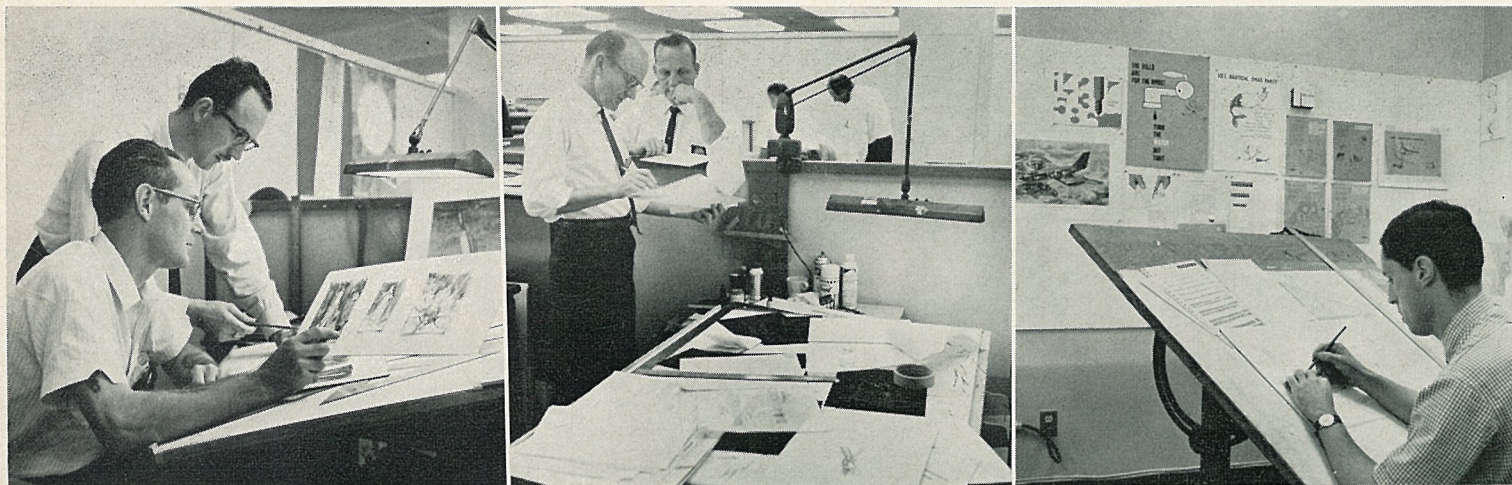


"Some lumber, nails, glass, a few dabs of paint and you've got yourself a new barn."



**BLUE SUIT GRADS**—Officers and men of Air Force 6555th Aerospace Test Wing, Atlas Operations Section, form ranks before "campus landmark" of Blue Suit training program at Cape Canaveral's Complex 11.





**VERSATILE**—Serving not only GD/Convair but other Dynamics divisions as well as outside firms is GD/Convair's versatile art and editorial section, headed by Pat Fitzgerald, far right at drawing board. In center: George Paul, designer and illustrator, consults

with Nat King, writer, on brochure. At left: Carl Bair (standing), director of design group, goes over preliminary sketches with Jack Davis, illustrator. GD/Convair booth, designed in section, recently won honors in SD art competition.

## Convair Art-Editorial Section Serving Variety of Customers

For the second time in that many years, General Dynamics/Convair's versatile art and editorial section of customer support has been named outstanding for entries in San Diego competition.

Award-winning is no new feat for Pat Fitzgerald's group of talented artists and writers, but latest honors hold more significance than most. Their display, designed to advertise the division's capabilities and products at a showing this spring in San Francisco, was tabbed best in the exhibit category at the San Diego Exhibition of Advertising and Editorial Art.

The display, set up at the San Francisco Western Space Age Industries Show in April, and later, at Plant 1 for all to see, contained actual specimens of the division's advanced work in various fields, with associated products already tried and tested. Alongside foremost manufacturing developments using exotic materials, a slice of an actual Convair 990 jet transport brought the far-out down to earth for spectators.

Though advertising GD/Convair's products is a main reason for being, the section has put together campaigns promoting everything from shrimp to jai alai during the last few months, many for customers outside of Dynamics.

Fitzgerald, who heads up the combined efforts of 11 illustrators and three writers, said, "We probably handle and put together material dealing with more different subjects than any other operation. And, the daily output is amazing, not only in amount but for its consistent uniformity and high quality."

Working steadily at top speeds is standard practice when a rush job is on hand. In emergencies, when they've been called on for "quick charts" to show customers, lights burn in the Bldg. 5 second floor area.

Though most of their work is for GD/Convair division—brochures, proposals, exhibits, posters, letterheads, flyers—a number of other customers, both in the Corporation and outside businesses, call on them.

For instance, since this spring they have prepared advertising campaigns for Ocean Garden Products, Inc., Jai Alai Fronton Palace in Tijuana, illustrations and art for GD/Astronautics, slides for General Atomic, and all promotional in-plant and out-plant material for GD/Electronics.

Now, the section is easing the mysteries of printed matter by providing all departments a handbook explaining procedures of preparing different types of brochures, either those entirely re-

searched, designed, written, and illustrated by art and editorial staffers, or with part or all of material supplied by other sources.

All of the illustrators and writers are well-prepared for their demanding and varied tasks with wide backgrounds of training and experience in their fields. Fitzgerald himself holds a degree in fine arts from University of Minnesota's Minneapolis School of Fine Arts. He came to GD/Convair over a year ago after several years in commercial art and design, including a stretch in the New York Times' promotion department, work as one of the art directors on Chevrolet's account with Campbell Ewald Advertising Co., Detroit, Mich., and free-lance designing in Los Angeles, not to mention a tour with the Marine Corps—in graphic arts.

## Low Level Ejection Seat Design For F-102 Works to Perfection

A new type of escape system, designed and developed at General Dynamics/Convair especially for the F-102 jet interceptor under an Air Force contract, now is proving its worth as it is being incorporated into the Convair-built planes.

Reports coming from actual use of the "seat man separator" show that it has been 100 per cent successful when used at altitudes for which it was designed.

Design of the new concept escape system was initiated almost four years ago at request of the Air Force for a system which would prove successful at altitudes of 1,000 feet and below. GD/Convair received go-ahead on production in the summer of 1960 with final shipment of modification kits made the first of 1962. Incorporation into F-102s based with AF squadrons all over the world will extend probably over the next year.

In two known ejections the seat man separator gained itself well satisfied "customers," whose lives hung on perfect operation of the system close to the earth. One pilot reported that he was down to 1,000 feet in a steep dive when he jettisoned the canopy, and dropped to 400 feet before he could squeeze the trigger to eject. He commented that "the F-102 escape system worked beautifully."

In the other episode, the aircraft actually made ground contact and bounced back into the air as the pilot ejected. Here again, positive seat man separation made it possible for the parachute to open and blossom long enough to deposit the pilot safely on the ground. He said, "the escape system worked just perfectly!"

Most significant factor in the system is that it forces the seat away from the pilot.

The F-102 ejection seat has two straps attached to the front of the seat, routed beneath the survival kit and cushion on up the back of the seat to a rotary actuator. The rotary actuator is



**SHAKE-UP** — Dummy goes through up and out gyrations during tests of GD/Convair-developed escape system for F-102 now being installed in craft by AF.

powered by a ballistic charge and fired immediately after ejection, rolling up the straps until they become taut. Thus, the pilot is lifted out of the seat as it is forced away from the pilot and survival kit. The pilot's lap belt and low level parachute deployment lanyard are sequenced to function just before the seat man separator fires, providing immediate parachute deployment following ejection.

### Scholar

## Physics Major Selected For Study Abroad

Cyrus Ulberg, son of Howard M. Ulberg, GD/Pomona, and Mrs. Ulberg, left San Francisco Jan.



Cyrus Ulberg

Selection to attend the tenth session of Stanford-in-Germany from January to June, 1963, was on the basis of scholarship. The only added expense for the winter and spring quarters will be transportation home in June and the cost of travel in Europe during a three-week holiday between semesters.

Ulberg, who was employed in the computing group (Dept. 6) last summer, visited with his parents during the Christmas holidays. He plans to spend the three-week vacation between semesters, March 16 to April 8, visiting relatives at Kolvereid, Namdalen, Norway.

### 'Smile a Mile'

## Father, Son Weekend Clowns; Play Hospitals, Orphanages

A General Dynamics employee and his son travel many miles each year, trying for at least "a smile a mile" from the many youngsters—usually shut-ins—they entertain.

Scrape the grease paint from Rollo & Son ("Clowns for all occasions," their card reads), and you'll find Roland Soucey, Los Angeles area distribution supervisor for General Dynamics' Liquid Carbonic Division, and his son, Leo, 15.

Operating from their Los Angeles home, the Souceys annually play benefit performances at hospitals and orphanages from Santa Maria to San Diego. (They put in a pre-Christmas appearance at San Diego's Mercy Hospital last month.)

The elder Soucey is a veteran of New England circus and carnival circuits.

"I started in the clown business when I was about 16," he said. "Since I joined Liquid Carbonic over 17 years ago,

it's been a hobby, however."

Leo had a still earlier beginning; under his father's tutelage, he was performing by the time he was 12.

Wearing matching red and white baggy pants and traditional frill-collared jumpers, outrageous orange wigs, and grease paint smiles plastered from ear to ear, the two clowns "wow" their young audience by merely flapping into a room.

The big clown does magic tricks, while the little clown does all the hard work of entertaining (at least according to his father).

Balloons abound in their routine. Young Leo even uses them in a feature stunt which regularly "brings down the house."

Using long, narrow balloons, he gives them a twist or two to produce wildly colored "animals."

This fantastic menagerie is distributed among the young spectators—courtesy of Liquid Carbonic's "traveling clowns."

### All in Miniature

## Young SD Hobbyists Develop Collection of Unique Autos

Tinkering with cars, in miniature that is, has become big business for a GD/Convair son combine.

And, now that they've perfected their replicas of 30-year-old cars, they are going on to reconstruct the real thing for their own use.

Tom Hurley, son of George Hurley Jr. (Dept. 16), and John Peterson, son of Ivar Peterson, spend their spare time (and some that isn't so spare, according to their mothers) building model cars.

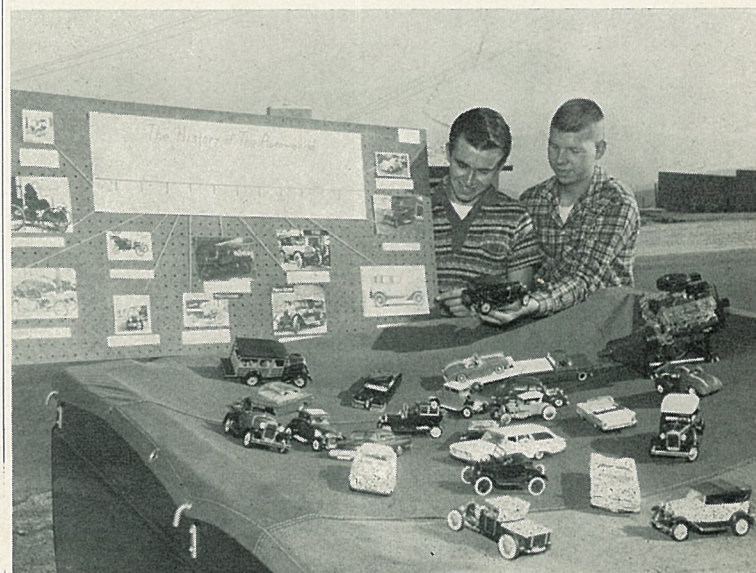
Their hobby, begun when they were mere lads of 10 or so, has resulted in an extensive collection of faithfully reproduced models, ranging from a 1911 original stock Rolls Royce and 1930 Model A phaeton to a 1960 Falcon.

Although they might begin

with a packaged kit, they use their own ingenuity and imagination to come out with an entirely different-looking car. They change motors, leave off fenders, install dual manifolds and cut down axles for dragsters, file off excess metal in cast models, swap parts, and choose their own color schemes.

Their collection was judged most creative from a standpoint of time, labor, and thought that has gone into it at a recent exhibit sponsored at the annual Border District Travel Trailers Club of America rally.

Both the teen-agers, Tom, 17, and John, 16, now are deep in building themselves 1930 Model As, prowling around auto dealer lots and junk yards for original parts that will make their "new" cars as perfect in every detail as their models.



**DESIGNERS**—Tom Hurley and John Peterson, GD/Convair sons, snapped with their collection of model cars and pictorial history of automobile which won them first in recent exhibit competition.

Inquiries concerning preparation of brochures, advertising campaigns, sales promotional material, etc., may be directed to P. J. Fitzgerald, ext. 2366, GD/Convair Plant 1, for full details.



# 1962 a Dramatic Year For Astro

Silos and spacecraft, planetary probes and projectizing, new affiliations, faces and facilities all went into the makeup of the "big story" of General Dynamics/Astronautics operations during 1962.

Instrumented spacecraft on journeys to Venus and the moon stretched the imagination and proved major accomplishments. Yet they failed to equal the dramatic effect of Glenn, Carpenter and Shirra rocketing around the earth and returning safely.

Meanwhile, ever-increasing numbers of Atlas launch complexes were placed in the hands of combat-ready Strategic Air Command crews.

Behind these accomplishments and others stood the Astronautics "family" that also learned to work under some new bosses, both internal and external, took on some new tasks and adapted quickly an innovation known as "projectizing."

Employment for the year fluctuated, mostly due to the completion of base activation tasks at off-site bases. The off-site force numbered as high as 11,000 early in the year and leveled off around 4,000 toward the close. On-site totals were more consistent, ranging around 22,000 for most of 1962 before dropping to slightly below 20,000 as the year closed.

## Atlas Gains Prestige From Many Successes

Successful flights in a varied array of programs found Atlas chalking up an impressive record of reliability throughout the year.

Whether aimed at a "window in the sky" as a space launch vehicle or a sonar-marked invisible "bull's-eye" on a distant ocean as a weapon system, Atlas came through with flying colors in launches from both coasts for a variety of "customers."

(Late in the year some indication of future probes was evidenced in an Air Force award for a standard Atlas space launch vehicle to be known as Atlas SLV III. The \$76 million contract called for design, development, production and launch of 35 "birds" and the modification of launch pads for them at Cape Canaveral and Vandenberg AFB.)

Few events in history have attracted the attention of three Project Mercury flights which gave Atlas a record of five straight successful flights in this program. On Feb. 20 John Glenn made the nation's first manned orbital flight powered by Atlas 109-D. In a repeat three-orbit mission May 24, Scott Carpenter rode aloft aboard Atlas 107-D. In October Walter Shirra made a six-orbit flight powered by Atlas 113-D in a mission described as "flawless." Behind each of these flights was one of the most comprehensive pilot safety programs ever conceived in which Astronautics personnel, from assembly line to launch pad, played vital roles.

Three announced probes during the year involved Atlas coupled with Agena B stages and special

spacecraft. Mere mention of launches by this combination accompanied other flights with no details of results.

Mariner II set a whole basket full of new records in a fly-by of the planet Venus. This successful venture lasted 109.5 days and covered 180.2 million miles. Data gathered is expected to give scientists for the first time some indication of conditions on the earth's nearest neighbor.

During two Project Ranger probes toward the moon, Atlas launch vehicles performed perfectly.

Atlas also performed as planned in launching its biggest payload, a Centaur space vehicle, during May. Weight lifted was 32,000 pounds. While a malfunction in the upper portion of Centaur resulted in an explosion 55 seconds after lift-off, useful information was obtained.

As a weapon system, Atlas rang up a new Pacific Missile Range distance record when Atlas 141-D flew 7,000 miles following a July 12 launch by SAC crews. In August other SAC crews proved Atlas' multiple countdown and launch capability with two quick launches within a brief period of time. Also from Vandenberg AFB came the initial launch of a series "F" Atlas from a silo installation.

August found seven Atlas launchings setting a new record for monthly launchings. Six of these were announced with five tabbed as successful, resulting in a monthly reliability of 83 per cent.

Dec. 5 marked the final research and development flight of the series "F" program when Atlas 21-F was fired at Cape Canaveral in a successful operation.

Atlas 21-F was the 153rd Atlas launched. Only the Thor intermediate range missile of all the nation's missiles, has more launches on the books.

Looking toward the future, some 15 manned and unmanned scientific and deep space probes have been programmed for Atlas vehicles during the coming year.

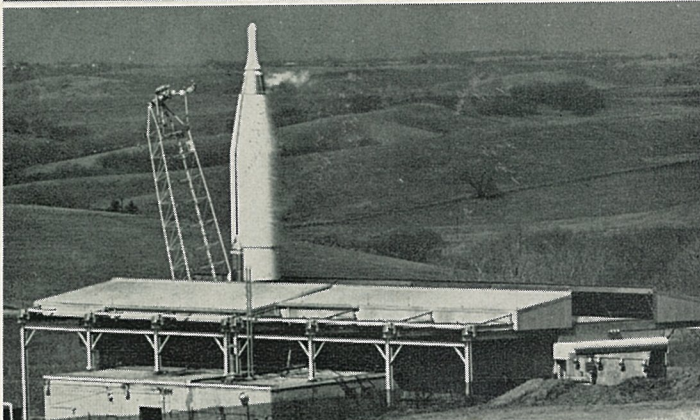
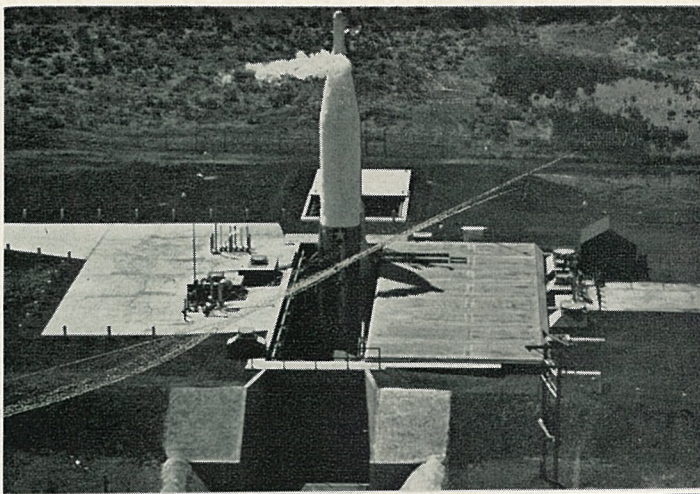
## 'Projectizing' Affects Centaur, Extends to Atlas and Nova

Launchings and activation occupied GD/Astronautics off-site forces throughout 1962 while the on-site groups contributed outstanding support as needed, and experienced something new—they were projectized.

New project line organizations brought together under a single unit all groups working permanently on a single project. They help to achieve contract objectives and meet customer requirements through better direction and authority and pinpointing responsibility.

Centaur led the project parade with space launch vehicles, Atlas weapon system, electronic products and Nova following closely.

Elsewhere, a series of realignments followed as support and



**BIG EFFORT**—Outstanding during GD/Astro year was completion of Atlas launch complexes and delivery to SAC. Off-site folk battled many "foes," including weather. Photo above was taken at Plattsburgh AFB where work went ahead despite heavy snowfall. Upper pictures illustrate three types of Atlas sites: left center, "soft" site where missile is stored horizontally; left top, semi-hard, where Atlas is housed horizontally, but all underground; top right: silo, where missile is stored vertically and all underground.

## 'Sell-Off' of 72 Launch Complexes A Major Astro Accomplishment

In the final four months of 1962 GD/Astronautics Atlas base activation crews wrote a fitting final chapter by delivering 72 launch complexes and support facilities to complete the program.

By comparison, 45 launch complexes were turned over in 1961.

Installation and checkout activities on 12 launch complexes

at each of six silo or series "F" bases was completed from mid-September through mid-December.

Final "sell-off" came Dec. 19 at Plattsburgh AFB.

Thus, just four and a half years after ground was broken for the first all-operational Atlas base (Warren AFB) the program was essentially complete.

Now in the hands of combat crews of the Strategic Air Command are 129 Atlas launch complexes. For the series "D" weapon system there are interim gantry-type facilities (Vandenberg AFB only), plus "soft" sites at Vandenberg, Offutt AFB and Warren AFB. "Semi-hard" series "E" facilities are located at Fairchild AFB, Forbes AFB and Warren AFB. Rounding out the deterrent force are "hard" or silo sites with series "F" missiles at Schilling AFB, Lincoln AFB, Altus AFB, Dyess AFB, Walker AFB and Plattsburgh AFB.

Now on duty are 13 Atlas-equipped SAC Strategic Missile Squadrons at 11 different locations. Each base has a single squadron with the exception of Warren AFB where there are three.

Working to the closest possible time schedules, Astronautics base activation forces and those from associate firms have racked up some impressive "on time" ac-

complishments over the years.

Timing at Plattsburgh AFB is a good example. The first complex there moved into the installation and checkout stage Jan. 25, the final complex on May 11. The first Atlas arrived April 5 and the first "bird" went to a silo installation on Aug. 2. SAC took over the initial complex Oct. 4 and the final complex shortly before Dec. 19.

Weather played an adverse role throughout the program. Not only were employees forced to drive long distances to remote areas, but often had to work in extreme cold, snow and rain. At Plattsburgh one day the temperature dropped to a minus 47 degrees!

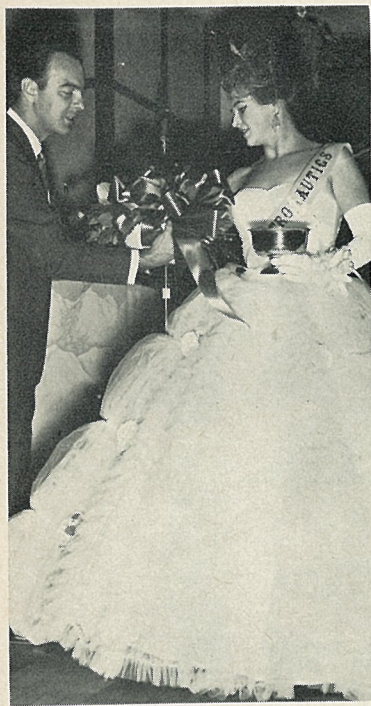
Throughout the four years of the program Astronautics families have been on the move to fill jobs calling for special skills. Some families moved to two and three different locations.

In a related program, Astronautics wound up exactly on schedule in performing the Golden Ram Follow On. This called for updating series "D" base facilities to incorporate latest changes.

Also during the year Astronautics product support personnel made final delivery of an extensive number of crew training devices designed to provide realistic training for men who now man Atlas bases.







**QUEEN OF ALL** — Virginia Mateja of Astro accepts royal corsage from ARA Snow Ski Club President Hal Moore, as she is proclaimed Queen of Third Annual Sno Ball. Candidates from all area ski clubs vied for honor.

## SPANISH STUDENTS ATTEND POSADA

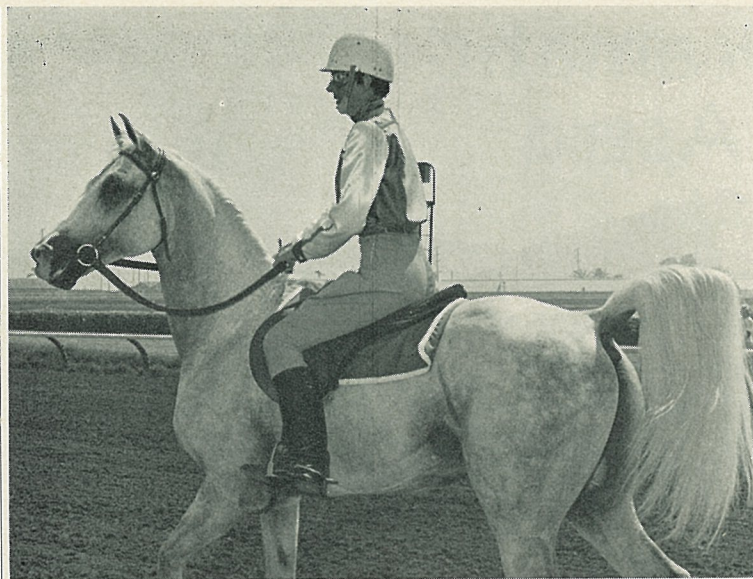
A true Mexican posada, complete with mariachis and pinata, entertained 40 Spanish students in the ARA-CRA-sponsored course on Dec. 16.

Jim Hardison of Dept. 15, GD/Convair, instructor and goodwill "ambassador," had a full evening of entertainment arranged for his GD/Astro, GD/Convair, and GD/Electronics students at the Tijuana Country Club.

One of the highlights of the evening was appearance of a young boys' choir from the Sacred Heart Catholic Church. Following the dinner hour, San Diegans had the opportunity of joining the young people of the Orquidia Social Club at their holiday dance in the clubhouse.

Breaking the traditional pinata climaxed the affair.

The day before, Hardison with eight others of the Spanish course distributed carloads of toys, clothing, and food to 140 "newsboys" and members of their families at El Mexicano newspaper plant. This was the third year that Hardison's Spanish classes had helped make Christmas happier for the Mexican families.



**SPEED STEED**—Winner in first Arabian horse races held in California was Mohaez ridden by Fran Farrell. Handsome seven-year-old stallion led field by two lengths.

## GD/Astro Wife Rides Arabian For Race Win

Fran Farrell, wife of GD/Astro's R. M. Farrell, Dept. 974-4, is a winning "jockey."

In races held at Del Mar in conjunction with Desert Arabian Horse Club's annual all-Arabian show, she guided Mohaez, a seven-year-old, to victory in two half-mile runs.

Mohaez was imported last year from Poland by Charles Doner of Elsinore. The stallion had raced two seasons in Poland (where Arabians are as popular at the track as the Thoroughbred in the U. S.), was never un-placed, and set two track records.

At Del Mar, Mohaez led the field from wire to wire in both races, winning each by about two lengths. The races were the first to be held for Arabians in California.

Mrs. Farrell, like all other riders in the races, is strictly "non-professional." She first mounted Mohaez only four days prior to the races.

## Model Railroad Fans to Lead In Balboa Park Open House

General Dynamics model railroaders will be playing leading roles in local observance of National Model Railroad Week by virtue of their posts in San Diego Model Railroad Association, with which both CRA and ARA groups are affiliated.

Open house for the public will be held throughout the entire week, from Jan. 26 through Feb. 3, at Balboa Park's House of Charm, headquarters of model railroad operations in San Diego,

said Karl Busch of GD/Convair, association president.

Assisting will be Bob Durnell of GD/Electronics, secretary; and board members, Bert Gowing and John Pinson, GD/Convair; James Hamill, GD/Electronics; and Bill Worthington of GD/Astro.

HO and O gauge operations will be held during open house hours which will be from 1 to 4 p.m. on Jan. 26, Feb. 2; 1-4:30 p.m. on Jan. 27, Feb. 3; and 7-9 p.m. on Jan. 28, 30, Feb. 1.

Visitors are encouraged to bring their own rolling stock to test-run on the layouts. A question and answer booth will be set up so that information can be passed to anyone on model railroading. Ways and means of improving modelers' stock or layouts will be available from experts.

On Sunday, Jan. 27, a continuous program of movies will be shown from 1 to 4:30 p.m. Door prizes will be given each hour on all open house days.

## GD/E's James Hamill On Railroaders Slate

James Hamill of GD/Electronics was elected treasurer for the coming year of San Diego Model Railroad Association in recent elections.

Board members are all General Dynamics men: Karl Busch and Bert Gowing of GD/Convair; Bill Worthington of GD/Astro; Bob Durnell of GD/Electronics.

## Ice Skating Club Schedules Hockey Trip, Big Bear Weekend

While negotiations with San Diego ice skating arenas continue toward resumption of weekly skating sessions and free instruction, the joint ARA-CRA Ice Skating Club has announced a trio of other forthcoming events.

First on the agenda is a 9 a.m. to noon skating session at Paramount Ice Arena, Los Angeles, Jan. 13. Participants will provide their own transportation.

On Jan. 26, a bus load of skating fans will visit Los Angeles Sports Arena for the hockey game between L.A. Blades and San Francisco.

Reservations are now being accepted at both Astro and Convair employee services offices. Cost, including choice reserved seat for the game and transportation, is \$7 per person.

A chartered bus will leave the GD/Astro reception center at 3:30 p.m., make a dinner stop at Knott's Berry Farm, and arrive at the arena by 8 p.m. game time.

Participation is limited to 40.

The club's seventh annual Winter Weekend at Big Bear Lake will be held Feb. 8, 9 and 10. The entire Wawona Lodge has been reserved, and Gil Hutter, Prophet Co. cafeteria manager at GD/Astro, will again preside over meal arrangements.

Activities will include ice skating, skiing, dancing, and a pizza party. Price of two nights' lodging plus three meals is \$11 per person. Reservations are being accepted at employee services offices at both divisions.

Additional information on skating activities is available from Commissioner Bud Davies, GD/Astro ext. 4041.

## Salvage Schedule For Jan. Announced

Salvage yard schedule for next four weeks:  
GD/Astro—Jan. 12, 26.  
GD/Convair—Jan. 19, Feb. 2.

## Dynamics Modelers Expected In Force For Jan. 19 Contest

All General Dynamics modelers will be out in full force to put their rubber-powered scale models through their paces at the coming CRA Aeromodelers free flight rubber-flying scale contest Saturday (Jan. 19).

Families of contestants from GD/Convair, GD/Electronics, GD/Astro are urged to come along to the Clairemont Mesa flying site to watch the fun, said CRA Commissioner Don Larsen.

"Activities will be provided for the wives and children, if they are not already addicted to modeling," promised Larsen.

Events will start at 8 a.m. and continue until 11 a.m.

All models must make a qualifying flight of 15 seconds. They must be hand-launched, but take-

off points will be lost. Any number of flights are permitted.

If the model has an unusual color scheme or detail work, a drawing or photograph of the prototype should be furnished to aid in judging, Larsen pointed out.

Judging will be based on both flight performance and appearance, on a basis of 100 possible points in each category. Trophies will go to first place in two divisions—adults connected with General Dynamics divisions, and junior dependents. Merchandise prizes will be awarded other places.

For more information contact Larsen at ext. 2289 or Larry Peterson, Aeromodelers president, ext. 1477, both Plant 1.



**TUNE UP**—Larry Peterson, new president of CRA Aeromodelers, shows rubber-powered flying scale model of Messerschmidt BF-109, made by Commissioner Don Larsen, which will be entered in Jan. 19 contest.

## Joint Garden Club To Meet at Center

The joint ARA-CRA Garden Club will meet tonight (Jan. 9) at Ara-Chem Inc., 808 Gable Way, El Cajon.

The garden supply center is located two blocks east and two blocks north of Roaring Twenties. Starting at 7:30 p.m. the group will be shown the latest in gardening equipment.

Several representatives of garden product firms will be on hand to display and demonstrate their wares, and a rose pruning demonstration is planned.

## Plant 1-2 Overpass Closes This Month

The vehicular overpass linking Plants 1 and 2 (Gate 20) has been closed until further notice.

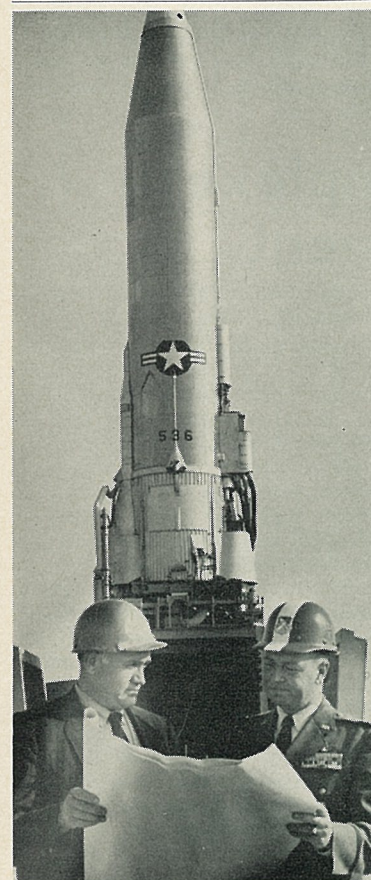
Dynamics Plant 2 employees have been asked to use Gate 28 (near the cafeteria) for both entering and leaving the plant on first and second shifts, Monday through Friday.

Gate 23 near the pedestrian overpass will be used at other times, and by third shift employees.

## Invitation Issued By Toastmasters

Dynamics Toastmasters No. 457 has repeated its invitation to General Dynamics employees in the San Diego area to take part.

GD/Astro's R. C. Emerson is president of the chapter, meeting at 6 p.m. each Thursday in GD/Convair executive dining room. Management Clubs at both Convair and Astro assist in defraying costs of their members' participation in Toastmasters.



**SILo SCENE**—Although Atlas silo installations are normally associated with operational "F" series bases, they are in evidence at Vandenberg AFB also. Jim Copeland, Astro site manager for OSTF II, and Maj. Dave Haydes, site commander for 6595th Aerospace Test Wing, look over plans before Atlas 13-F. Latter was launched Nov. 14, marking third silo launch from Vandenberg AFB.

## Hamann Chosen For GD/E Post

O. F. Hamann has been appointed design specialist for data products at General Dynamics/Electronics-San Diego, according to an announcement by General Manager John L. Lombardo.

In his new post, Hamann will do advanced product planning and development for GD/Electronics' high speed printers, cathode ray tubes, and various systems and devices which display and record information from computers or communications links.

During his seven years with General Dynamics, Hamann has held several research and engineering positions and assisted in the design of the CHARACTRON Shaped Beam Tube and associated components now used in the SAGE air defense system.

He is a veteran of 14 years experience in research and development of information handling systems, having been employed previously by Transdata, Inc., Litton Industries, and the Armed Forces Security Agency.

A graduate of Carnegie Institute of Technology, Hamann also has done graduate work at the University of Maryland. He is a member of the Institute of Radio Engineers and holds several patents.

## Institute Offering Study Scholarships For New Graduates

Scholarships in a course of study leading to an associate in science degree are now available from Electronic Technical Institute, 4863 El Cajon Blvd.

Grants are for tuition only, and may be renewed for up to six semesters. They are subject to review each semester, based on scholastic performance, attendance and citizenship.

Scholarship eligibility is restricted to recent graduates of local high schools. Details are available from the school's dean of students, C. L. Thacker. Application deadline is Jan. 15.

GD/Astronautics tuition refund program applies to courses offered at Electronic Technical Institute. The school has programs leading to a bachelor of science degree in electronic engineering, as well as the associate in science degree.

## Graduate Program Deadline Nearing

General Dynamics employees wishing to enroll as graduate students in San Diego State College spring semester campus evening program have until Jan. 15 to apply for admission.

Registration for the evening program will be held between 8 and 11:30 a.m., Feb. 2, in the College Library.





XMAS SCENES—Typical of GD/Astro departments that went all-out to help needy was Centaur's Dept. 972 (right hand photo) which gathered toys for two Indian families. Ray Trussell and H. H. Miller are shown with inspiring array. At



left is scene prior to annual party for needy children, when 150 volunteered for gift-wrapping. In center is fetching photo taken during spirited ARA Christmas dance, attended by 1,800.

## ARA Riding Club Votes Officers

New officers, headed by Bill Penn, president, have been elected by ARA Riding Club.

They include Rick Moore, vice president; Jack Harrison, treasurer; and Betty Dean, secretary. Joanne Lee will manage publications and communication.

Elected to the club's board of directors are Joe Pena for an 18-month term, Mrs. Penn who will serve 12 months, and Chuck Cearley for six months.

Joanne Lee has been awarded the club trophy as the member earning the most points during horse shows held at ARA Arena during 1962. High point and reserve champion trophies also went to top scorers from organizations outside the ARA club.

Commissioner Art Smith has invited all employees to consider Riding Club membership by attending meetings held at 7:30 p.m. on second and fourth Tuesdays of each month in ARA Clubhouse.

## GOLF CLUB LISTS SCHEDULE FOR '63

A tournament at Carlton Oaks Jan. 19 and 20 will open the 1963 season for the newly reorganized ARA Golf Club.

Monthly tournaments this year are open only to Golf Club members. Memberships will be accepted only through the Plant 71 employee services office between 11 a.m. and 1 p.m., 4 and 5:30 p.m., Jan. 7 through Feb. 15.

Tournament entries are taken by ARA headquarters, ext. 1111.

The club's other 1963 tournaments will be at Rancho Bernardo, Feb. 16, 17; Circle "R," March 23, 24; and Bonita, April 20, 21. May is reserved for an Industrial Recreation Council tournament.

Coronado will be the scene of the meet June 22, 23; Torrey Pines is tentatively scheduled July 20, 21; Bonita, Aug. 10, 11; Carlton Oaks, Oct. 12, 13; Fletcher Hills, Nov. 2, 3; and Circle "R," Dec. 8.

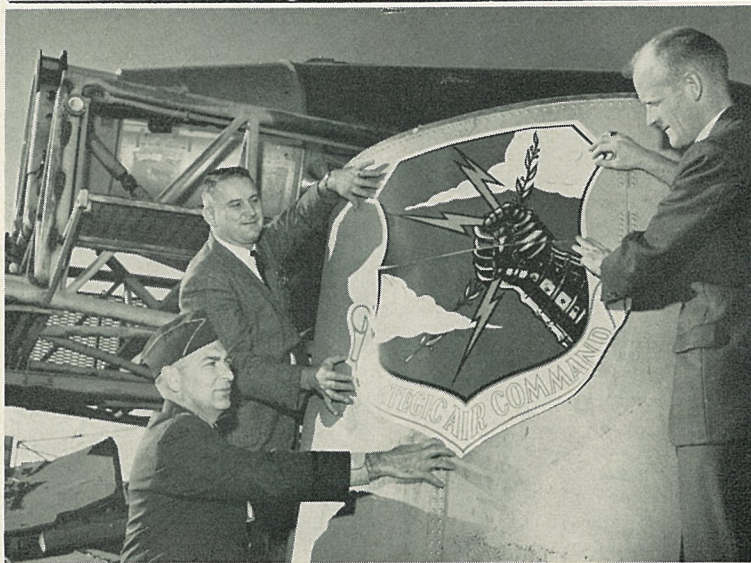
## KINGSTON TO PLAY FREE ORGAN CONCERT

A special organ concert featuring Don Kingston will be presented free at the ARA Clubhouse at 8 p.m., Jan. 28. Kingston will present a varied program demonstrating a new Conn organ. Door prizes will be presented courtesy of Ozzie's Music Store which arranged for the concert in cooperation with Astronautics Recreation Association.



"We've enjoyed every second of our visit."

## Sports & Recreation



SYMBOLIC—When Atlas 3-E (background) is erected in Astronautics Recreation Association Area it will be complete with mailed-glove insignia of Strategic Air Command. Lt. Col. George W. Johnson, left, of AFPR office at Astro acquired decals from SAC. Showing how they will look are Bryan Weickersheimer, ARA president, and Bill Shine, co-chairman of the Astro Management Club group preparing "bird" for display.

## Fledgling Rugby Team Needs More Recruits

Still more players are needed for GD/Astronautics Recreation Association's fledgling rugby team which met a University Club squad in its first game Jan. 6.

Particularly sought for the ARA team are employees with previous experience in football, basketball, or similar sports. This background enables players to make the transition to rugby easily.

Rugby is a rugged, fast-moving game played on a field slightly larger than that used for football. A game consists of two 40-minute halves separated by a 5-minute break. There are no time-out periods.

Following the kickoff, the game is "wide open" as both 15-man teams try to score by touching the ball down in their opponents' end zone. Play is continuous, and the ball may be handled by any player, run, kicked, or passed laterally. When a player with the ball is tackled and stopped, he must roll away from the ball, which continues in play.

The ARA club has been admitted to membership in the Southern California Rugby Union. Next game will pit Astro against Eagle Rock Athletic Club Jan. 13. On Jan. 19 they meet University of San Diego, and San Diego State

## ARA Coineer Units Will Hold Auctions

Astronautics Coineers will hold meetings at 7:30 p.m., Jan. 16 (first shift), and 1:15 a.m., Jan. 17 (second shift) at ARA Clubhouse.

First shifters will hear a talk on Mexican coins by Gary Beales, with special displays, free coins, an auction and a business session.

Second shifters will feature a trading session, auction and displays.

College Jan. 26. Both the latter games will be played in San Diego.

Additional information on schedules is available from ARA headquarters, ext. 1111, where prospective players may obtain details on joining the team.

## Snow Ski Club Meets Tonight

Fresh from a four-day trip to Lake Tahoe area, ARA Snow Ski Club members will meet tonight (Jan. 9) at 7:30 p.m. in ARA Clubhouse.

Club President Hal Moore has announced that movies will be shown, club patches will be on sale, and door prizes of valuable gift certificates will be awarded.

Reservations for the club's January ski trip will be accepted at the meeting.

Thirty-eight members took part in the club's New Year's outing, skiing at Sugar Bowl, Squaw Valley, Heavenly Valley, Alpine Valley and Reno Ski Bowl.

Parties were held each night, with a New Year's Eve event at Lee Vinning, Calif.

## Auxiliary to Hold Stardust Luncheon

Astro Wives' Auxiliary will hold its first luncheon of the year Jan. 16 at Stardust Country Club.

A social hour will start at 11:30 a.m. followed by luncheon at 12:30.

Melda Schulz will show a movie "Coordinating Financial Planning," and conduct a subsequent question and answer period.

Reservations may be made by contacting Peggy Ferreira, 273-7634, or Hazel Hansen, 582-7843.

## ARA Calendar

General Dynamics/Astronautics Recreation Association (ARA) has more than 40 activities in operation for employees and members of their families. Listed here are current activities with monthly meeting schedules and commissioners. Unless otherwise indicated, meetings are held at 7:30 p.m. in ARA Clubhouse. More information is available from ARA Headquarters, ext. 1111.

★★★  
ARCHAEOLOGY—Fourth Wednesdays. Randy Miller.

ARCHERY—Currently inactive. Al Stone.

ARTS & CRAFTS—First Tuesdays; third Thursdays. D. A. George.

ASTRONOMY—Second Wednesdays.

BADMINTON—Federal Bldg., Balboa Park. Mondays, 7-10 p.m. Les Marr.

BALLROOM DANCING—Classes open periodically. Ludy Moeller.

BAND—Buster Carlson.

BASEBALL—In season. Bud Mechem.

BASKETBALL—In season. Archie Rambeau.

BOWLING—Leagues open periodically.

BRIDGE—Every Friday. Art Saastad.

CHESS—First and third Thursdays. Jack Horning.

CHORUS—Each Monday. Al Phillips.

COIN—First shift, third Wednesdays. Second shift, 1:15 a.m., third Thursdays. Joe Garside.

DRAMA—First Wednesdays. Jack Garrison.

EXPLORERS—Third Wednesdays. Herm Reichert.

FENCING—Downtown YWCA. Each Friday. Mike Hurley.

FISHING—First Mondays. Thrifty Field.

GARDEN—First Wednesdays. Everett Henderson.

GOLF—Monthly tournaments. Dick Tobias.

GUN—Convair Gun Club, Gillespie Field. Sundays, 9:30 a.m. Ezra Johnson.

HI-FI/MUSIC—Second Tuesdays; fourth Wednesdays. Ben Lachance.

ICE SKATING—Temporarily inactive. Bud Davies.

INTRA-MURAL SPORTS—In season. Rich John.

JR. ASTRONOMY—First and third Fridays.

MODEL AIRPLANES—First Wednesdays. Chuck Ogle.

MODEL RAILROAD—House of Charm, Balboa Park. Every Friday; Sundays, 1-4:30 p.m. Dave Fyffe.

MOTORCYCLE—First and third Wednesdays.

MOVIE MAKING—Last Mondays. Andy Dollinger.

PHOTOGRAPHY—Photo Arts Bldg., Balboa Park. First and third Sundays. Ken Rinker.

PHYSICAL CULTURE—Presently inactive. Clyde Burkhart.

PISTOL—Alternate Sundays, 9:15 a.m. San Diego Police Pistol Range, Home Ave. and Federal Blvd. Gordon McPherson.

RADIO—Alternate Wednesdays. Ed Carson.

RIDING—Second and fourth Tuesdays. Art Smith.

RIFLE—Convair Gun Club, Gillespie Field. First Sundays, 9:30 a.m. Bob Andrews.

ROCKHOUNDS—Second Wednesdays. Fred Baugh.

SKIN DIVING—Second Wed-

nesdays. Cliff Kickbush.

SOFTBALL—In season. Forest Irwin.

SQUARE DANCING—Classes open periodically. Marty Stutz.

SPORTS CARS—Third Tuesdays. E. S. Penick.

SNOW SKI—First Wednesdays in season. Larry Atwell.

STAMP—Second and fourth Thursdays. Art King.

TEEN-AGERS—Dances first and third Saturdays. John Hess.

TENNIS—Tournaments; instruction. Ben Cendali.

TRAILER—First Tuesdays. Ray Parga.

WATER SKIING—In season. Bill Johnson.

WIVES' AUXILIARY—Monthly luncheons at leading restaurants. Special events.

★★★

NOTE: Space permits General Dynamics NEWS to publish a complete listing of ARA activities only periodically. It is suggested that readers clip this schedule for future reference.

## Glithero's 70 Wins Over-All Golf Honors

Rancho Bernardo Country Club was scene last month of GD/Astronautics Management Club's third annual golf tournament in which 180 took part.

Top awards went to M. W. Glithero who shot a 70 for low gross overall honors, and V. E. Nagle whose 64 made him low net champion.

Low gross winners in the 0-13 handicap class were C. W. Maxfield (73) and H. E. Napier (75), trailed by K. F. Crotz and R. D. Lanham with 77s. Scoring low nets were J. D. Jones and R. E. Hart (66s), B. W. Kirch and J. M. Sentovic (68s).

In the 14-17 category, C. C. Pope's 80 was low gross, followed by F. E. Grossher's 83, an 84 by C. W. Moon, and 85 from P. L. Parker. Low nets in this bracket were scored by C. R. Cearley, C. C. Campbell and W. E. Hoffman with 69s, and J. S. Berggren with 70.

B. H. Garrett took low gross honors in the 18-24 bracket with 86. J. D. Wiley shot a second-place 90, and R. A. Rafflesberger, E. G. Farr and M. E. Stone shot 91s. A 65 by C. J. Kruck was low net, trailed by F. M. Boley's 68, 69 by K. E. Bradley, and 70s from J. R. Shuter, C. W. Power and Otis Tucker.

R. C. Hagley dominated low gross play in the 25-36 division with 90. R. B. Mohr scored 93, R. R. Reid 94 and C. L. Hartwell 95. Low net was 66 from A. R. Mosco, 67 from D. P. Bender, 68 from P. V. Smith, and 70s from D. Crayton and Q. R. Arbo.

Tournament director Art King expressed appreciation to C. B. Bagaloff, E. G. Farr, Joe Pearl, C. C. Welton and Jim Rose for their assistance.

Special trophies went to low gross and low net champions, and other trophies to first and second place golfers in the four handicap divisions.

## Controllers Tourney Won by Bob Stevens

Bob Stevens fired a 78 to win low gross honors in the first annual Astronautics controllers golf tournament held Dec. 31 at Stardust Country Club.

Hank Johnson won low net honors with a 73.

The budget department came through to take team honors in the tournament that drew 37 entries.

Other prize winners were Hal Wilson, Pat Gowan, Bob Young, Lou Grant, Fred Patton, Mike Williams, Jim Clabaugh, Bill Pruett, Jerry Washburn, Herb Armitage, Jerry Janda, Darwin Sweeney, Gene Fox, Fred Winkoop, Iris Oster and Helen Kielmeyer.





**MAKING THEIR MARK**—A human dollar sign, formed by GD/Convair men who completed latest value control seminars in division's continuing program, points up goal of value vs. cost training—dollar savings.

## Value Control Books Published For Use Throughout Industry

Programmed instruction for value control training will be issued in published form this month, H. P. Williams, manager of value control at General Dynamics/Convair, announced.

Publication of the complete set of five books, comprising the series for a value control program, culminates months of formulation and evaluation through joint efforts of technical publications, educational services, and value control groups.

The brochures, outlining value control techniques and principles in step-by-step form, will be made available to top management of aerospace and other types of industries concerned with establishing value control programs. At least 40 inquiries have already come to Williams, indicating the widespread interest in such instruction.

Use of the programmed instruction in value control seminars at GD/Convair has proved that learning time can be cut; number of lectures reduced; classtime made more flexible so that groups can be cycled through the training continuously; immediate analysis made of current programs and business proposals.

Twenty-six GD/Convair men completed the division's 11th full term workshop seminar the end of

the year to total 435 who have received value vs. cost indoctrination since the program was stepped up in the fall of 1961.

In addition, 236 top management and key personnel have completed the "quickie" capsule course of 6 to 8 hours. Most of these will go through the complete workshop course as schedule permits.

Next seminar at San Diego will begin the middle of this month with at least one a month slated in the coming year's program.

## Survey Under Way On TCU Curriculum

Registration for TCU spring semester courses to be held at GD/Fort Worth will be from 2 to 6 p.m., Jan. 17 in Room 113 C. Classes start the week of Jan. 31.

Officials from TCU will be available for both registration and counseling.

Courses leading to various management certificates, and to both bachelor's and master's degrees are tentatively being offered. The program is sponsored jointly by the GD/Fort Worth Management Club and TCU.

A survey sheet listing about 70 possible courses to be offered is now being distributed.

# Computer Used For Cataloging By GD/Astro Support Publications

Machines don't write books—yet!

But a unique system developed at General Dynamics/Astronautics during the final months of 1962 has made the computer an important tool for engineering writers.

The result is one of industry's most efficient technical cataloging techniques.

Last August, a team comprised of members from support publications, business data processing, and organization and systems began a study aimed at streamlining GD/Astro cataloging operations.

Their targets were two publications supporting the Atlas program: Illustrated Parts Breakdown (IPB) and Provisioning Parts Breakdown (PPB).

Very simply, the first provides identified illustration of missile system parts, while the second is a tabular listing of parts with detailed descriptions of each.

Although some 60 per cent of the information in each manual also appears in the other book, a separate support publications group was required to maintain each—analyzing engineering drawings, listing parts, editing, etc.

Team members reasoned that a data processing system could be used to collect all information for both books, sort it, and then print it out selectively. This would eliminate most areas of duplication between the two groups.

Working at break-neck speed, the interdepartmental team refined the system, developed and tested computer forms, and indoctrinated publications personnel involved. By December, a new organization built around the system was set up as support publications integrated documentation (Dept. 322-4) in Bldg. 2 at Plant 2, San Diego.

The section combines formerly independent IPB-PPB groups

under B. H. Michael, reporting to D. W. Rogers.

Basically, all IPB-PPB data are now fed into an all-tape IBM 1401 computer system.

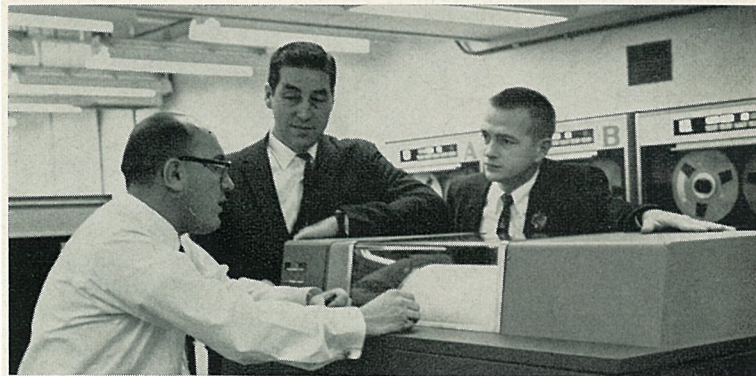
From the resulting integrated master tape, the computer produces 10 different outputs, selectively. These are a master parts list, standardization list, master integrated numerical index, PPB and IPB numerical and reference designation indices, provisioning parts breakdown, group assembly parts list and IPB vendor code list.

The system provides improved reaction time, and will result in savings of over \$1 million. Qual-

ity and uniformity of the manuals themselves have been greatly improved.

Chairman of the team responsible for the new operation was W. J. Raftery of organization and systems. Team members were J. R. Cash, Mary Pearce, V. D. Stewart, Fran Simmons, Bernice Whitney and R. A. Perkins of support publications, and F. H. Benson, business data processing.

Extensive computer programming required was directed by Supervisor V. A. Vella of data processing, assisted by Benson, a senior programmer, P. S. Murphy, Carol Minter and J. D. Thomas.



**NEW TECHNIQUE**—At top, Supervisor Vic Vella explains computer used in preparation of technical manuals to A. H. Gross and D. W. Rogers of product support. Below are members of team that developed new technique, Frank Benson, Bill Raftery, Roy Perkins, John Cash, Mary Pearce, B. H. Michael.

## IAS Will Hold Last Meeting

Institute of the Aerospace Sciences (IAS) will hold its last annual meeting Jan. 21-23 in New York City. IAS has merged with the American Rocket Society (ARS) to form the American Institute of Aeronautics and Astronautics (AIAA).

Among General Dynamics men taking part in the New York sessions are J. Y. McClure, corporate director of reliability and quality control, and N. H. Simpson, GD/Fort Worth reliability manager, who will discuss "Reliability contributions to the B-58 Hustler." Jerome J. Brainerd, senior aerodynamics engineer, GD/Astronautics, will read a paper on "Viscous and non-viscous hypersonic flows with finite-rate chemical reactions" while Charles C. Love Jr., design specialist, also of GD/Astro, will discuss "Cryogenic tank thermal design for planet missions."

## Ehricke and Romain To Present Papers

Two General Dynamics men will be on the program Jan. 15-17 when the American Astronautical Society holds its annual meeting in Los Angeles.

K. A. Ehricke, GD/Astronautics director of advanced studies, will present a paper on "Mission analysis of fast manned flights to Venus and Mars," while J. E. Romain, GD/Fort Worth staff scientist, will give a paper on "Natural time measurements in non-inertial frames."

## GD/Pomona's Sawyer To Present Paper

H. F. Sawyer of General Dynamics/Pomona (Dept. 6) will present a paper entitled "3-D Welded Module Design and Manufacturing Control Parameters" at the Electronics Component Conference, Washington, D. C., May 7-9.

## Modern Computer Techniques Applied to Planning in Shop

A technique for preparing shop planning quickly and accurately through use of modern computer methods—believed to be the first large scale application of its kind in the aerospace industry—is now in use at General Dynamics/Astronautics.

Electronic data processing programs are being used to process detail, assembly, installation and subcontract planning, previously prepared entirely on handwritten documents.

Basically a tooling program, the system will also support material, production control, cost control, performance reporting and configuration management functions.

Combined efforts of several GD/Astro departments were involved in program development. These include organization and systems, M. F. McDonald, manager; production engineering, G. A. Grossaint, manager; and data processing, C. E. Diesen, manager.

Heart of the system is a specialized planning document called a Planning Control Sheet (PCS). This contains all necessary information about a given part: materials, tools, operations, effectiveness, etc.

The PCS is prepared by tool and operations planners. Then it goes to data processing where PCS information is key-punched into tab cards.

Cards are fed into IBM 7074 and 1401 computers which compare the information against rigid specifications.

If the comparison is satisfactory, computers print out shop order data, installation planning documents, operation inspection logs and "make or buy" authorizations.

Should the machines detect an error, they print instructions for corrective action. These instructions are returned to planners

who revise the PCS accordingly.

(General system concepts stem from earlier studies at General Dynamics/Convair, where the PCS is being used in production of empennages for the C-141 Air Force jet cargo plane.)

"Essentially, the computer technique reduces a formerly tedious, time-consuming manual task to a fast, error-free automated system," said F. J. Gosselin, organization and systems supervisor, and chairman of the team which developed the technique at GD/Astro.

"Computers perform the thousands of steps required to check and file a PCS in less than a second, and simultaneously prepare both tape output for printing shop paper, and tapes for other applications," explained G. R. Jacob, data processing general supervisor.

"The final printing moves at a rate of 600 lines a minute," he added.

Gosselin's interdepartmental team accomplished the task of analyzing and defining more than 20,000 processing steps, each of which had to be carefully sequenced and translated to "computer language."

Team members included H. L. Prettyman, tooling representative; J. S. Dodds, systems analyst; R. G. McNutt, senior programmer; and a programming crew of W. J. Calkins, F. L. Cox, J. J. Goertz, E. C. Walsh, and G. H. Yamada.

## GD/Pomona to Hold 23rd Value Seminar

General Dynamics/Pomona's 23rd value engineering seminar will be held Jan. 14-25.

Three value improvement projects have been selected for the January seminar, J. W. Corr of educational services, said. Corr will be seminar coordinator.





## Special PERT Seminar Held For Executives

Twenty-five key General Dynamics/Astronautics executives including Controller E. G. Hill, took part in a special PERT Cost Seminar conducted at Astro Jan. 31 through Feb. 2.

The PERT (Program Evaluation and Review Technique) effort was under special instructors from Management Systems Corporation.

Participants spent eight hours in each of three sessions over the three-day period.

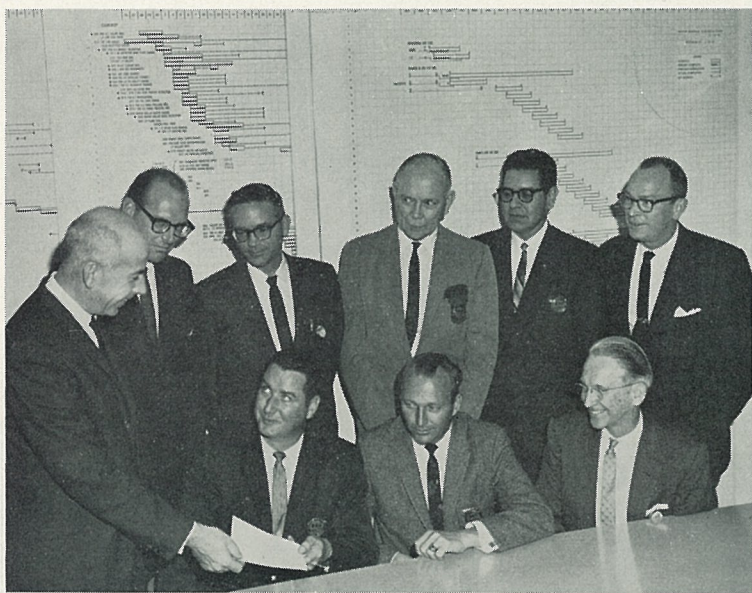
In the near future Astronautics will set up and conduct its own PERT Cost Course. Once established, it will be taught to Astronautics employees over an extended period of time as another addition to the all-important PERT training program.

Participants in the Cost Seminar will assist in drawing up basic topics to be included in the PERT Cost Course in conjunction with Astro's PERT development section of program planning and control and educational services.

In addition to Hill, seminar participants from Astro functional groups included: J. D. Milling, assistant controller; L. H. Boggess, manager of estimating; J. R. Tucker, manager of industrial accounting; R. E. Sabin, chief of operations scheduling; L. A. Chambers, PERT project administrator; T. R. MacConnell, material PERT cost administrator; and F. B. McQueary, PERT accounting coordinator.

Each of Astronautics' four project organizations sent four participants. They included managers of financial control, J. B. Morgan (SLV), J. C. Cannady (Centaur), B. J. Neal (AWS) and C. J. Marsden (electronics). Also managers of program control in-

(Continued on Page 2)



**WELL DONE**—Material department at Astronautics is phasing students into PERT Time Course sessions for first time, with training to extend well into March. Initial classes include key personnel. D. L. Platt, instructor, left, presents certificate of completion to R. H. Quinn. On Platt's left standing are L. A. Chambers, Astro PERT administrator; T. R. MacConnell, material PERT administrator; W. H. Barnes and H. K. Soper. Seated are Quinn, D. W. Schultz and R. D. Maw. Latter are students.

## Material Dept. Key Men Will Take PERT Course

Initial PERT Time Course training sessions have been conducted for material department personnel at General Dynamics/Astronautics with subsequent sessions planned for this group throughout February and March.

Astronautics has conducted PERT (Program Evaluation and Review Technique) Time Courses over an extended period of time for some 300 students. However, material department has just begun to phase its employees into this important program.

First classes were conducted for key material personnel.

Subsequent sessions will be held approximately one per week until more than 100 employees in material functions have received training.

Each class includes nine hours of work, split into three sessions, each for a three-hour period. They include lectures, general indoctrination and special workshop periods in which students actually apply PERT techniques to given problems.

Certificates are issued to those successfully completing the program.

## Ottem Appointed To GD/Astro Post

L. E. Ottem has been named assistant program director—scientific passenger pods, at General Dynamics/Astronautics, reporting to S. L. Ackerman, vice president and program director—electronic programs.

A veteran engineer, Ottem was associated with the F-102/106 and other major programs at GD/Convair. He joined that division in 1939 as an engineering draftsman, and subsequently worked in engineering liaison, design and research.

During 1961 and 1962 he served as chief, military project engineering, and as chief project engineer, respectively. In accepting the assignment in electronic programs, he transferred to GD/Astro last month.

## Waddell Appointed Asst. Chief Counsel

Ward W. Waddell Jr., has been appointed assistant chief counsel for General Dynamics/Astronautics, reporting to Chief Counsel H. Cushman Dow.

Before joining GD/Astro, Waddell was assistant to the vice president—legal, General Dynamics Corporation.

He is a native Californian, and a graduate of Stanford Law School. Prior to his corporate legal post, he was associated for more than 10 years with the San Diego law firm of Gray, Cary, Ames and Frye.

## Centaur Destined For Moon Shot

Assignment of a DX priority—the nation's highest—to the General Dynamics/Astronautics Centaur program has re-affirmed the space vehicle's key role in the nation's space program and emphasized its importance to lunar explorations.

This was the consensus of two men closest to the project, Dr. Abe Silverstein, director of National Aeronautics and Space Administration's Lewis Research Center, and Grant Hansen, Astro vice president and program director—Centaur.

Dr. Silverstein indicated the great importance of Centaur's role in unmanned exploration of the moon prior to manned landings and its work in establishing liquid hydrogen technology important to later manned flights were considered carefully in assigning the DX priority.

(While NASA may request assignment of the priority, it can be authorized only by the President.)

Hansen feels the priority assignment is a vote of confidence in Centaur.

He pointed out that since its initial flight in 1962, Centaur has been thoroughly investigated by Congressional and government agencies to determine that Centaur's objectives and design are sound and reasonable.

GD/Astro will increase its Centaur development tempo by placing employees involved in the program on a six day (48-hour) work week.

Affected are some 1,800 Centaur employees in San Diego, at Edwards RS, and Cape Canaveral.

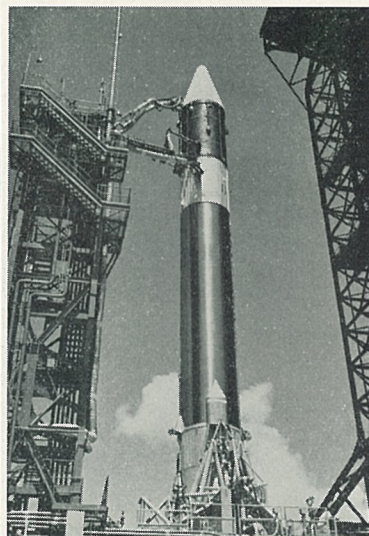
Immediately available to the program are priority rights in the procurement of materials, components, and the use of industry and government test facilities. The DX also extends to all contractors involved with Astronautics in developing Centaur.

Astronautics has already notified all contractors of their rights to "first call" on parts, materials and services they require to accomplish their work on the project.

Dr. Silverstein informed a recent Los Angeles press gathering that Centaur programming is geared toward meeting flight requirements of Surveyor—the spacecraft Centaur will carry to the moon. Development flights of Centaur, he said, will begin in the middle of this year with

an aim at achieving combined final flight in early 1965.

Because of the urgency of the program, Centaur will be subjected to a more comprehensive ground test program than has ever been employed in any space vehicle program, Dr. Silverstein added.



**LUNAR VEHICLE**—Assignment of DX priority—nation's highest—to Astronautics' Centaur project will help pave way for quicker lunar probes with unmanned vehicles prior to manned flights. Centaur will carry Surveyor spacecraft on such missions.

## Heller Joins GD/Astro For Value Control

President J. R. Dempsey last month announced appointment of E. D. Heller as manager of value control at General Dynamics/Astronautics, reporting to F. J. Traversi, vice president—administration.

Heller will direct GD/Astro's value control program, applying value improvement practices to existing products, and to engineering design of other original products. He will administer a program designed to instill value vs. cost attitudes in all employees.

"We must assure ourselves and our customers that maximum value is received for every dollar spent," Dempsey said in making the appointment. (Continued on Page 2)

## Contract Department Managers Appointed

Appointment of three contract department managers at General Dynamics/Astronautics was announced late last month by F. J. Traversi, vice president—administration.

All report to C. W. Blakey, director of contracts (Dept. 110).

Assuming new duties effective Jan. 2

were C. O. Roberts, manager of contracts—administrative support; F. S. Chambers, manager of contracts—pricing and proposal development; and C. R. Walker Jr., manager of program planning and control. Roberts joined GD/Astro last year. He was previously general sales manager of Langley Corporation, San Diego, and prior to that time had been employed by the former Convair General Office.

During World War II, he served in the U. S. Navy, attaining the rank of commander.

Chambers joined General Dynamics in 1951 at GD/Convair where he filled various executive positions in the contracts department.

He served consecutively as chief, and later manager, of contract administration, manager of contracts, and prior to joining GD/Astro last year was director of contracts.

Walker retains a title he has

held since 1961 under a modified organizational alignment. He holds an engineering degree from



C. R. Walker Jr. C. O. Roberts

Colorado University, and has previously served at both Convair and Fort Worth divisions of General Dynamics.

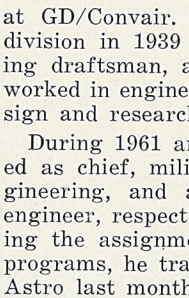
He joined GD/Astro in 1956 as research group engineer; in 1958 was named senior flight test group engineer; later served as program control administrator and master scheduling manager, and was named manager of program planning and control (Dept. 152) in 1961.

The new appointments bring to seven the number of manager-level executives in contracts assignments.

In GD/Astro's project organizations, C. W. Power serves as contracts manager—electronic programs; R. J. Riddell, contracts manager—Atlas Weapon System; A. T. Wood, contracts manager—space launch vehicle; and T. C. Courington, contracts manager—Centaur.



L. E. Ottem

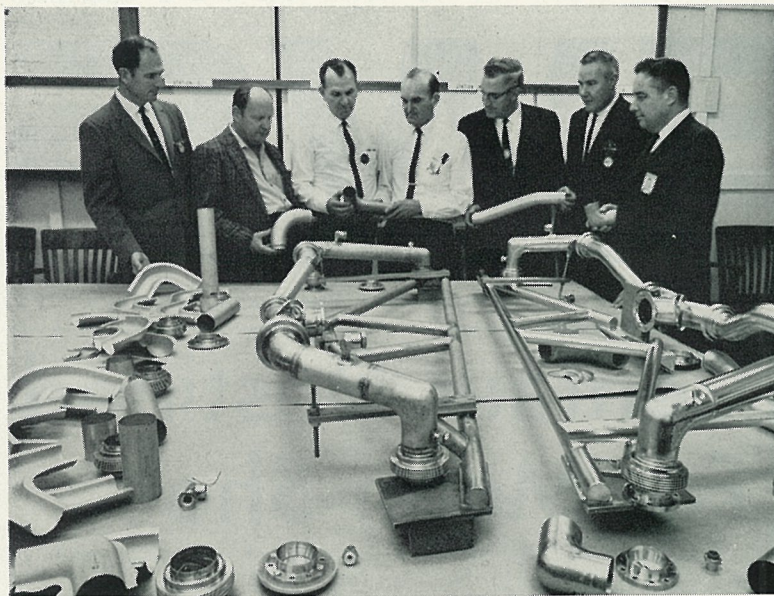


W. W. Waddell Jr.

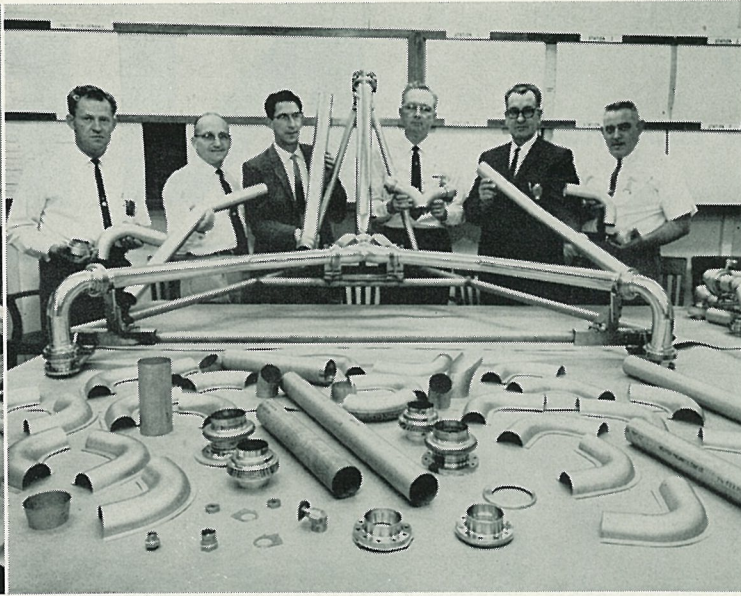


**WELCOME ABOARD**—F. J. Traversi, vice president—administration, greets E. D. Heller, newly appointed GD/Astro manager of value control. Heller was previously value control coordinator at GD/Pomona.





**PROTOTYPES**—Operations departments at GD/Astro have recommended simplified manufacturing of two fuel transfer lines above. At right Maynard Bjorstrom, Joe Merk, Lee Snyder, C. C. Pope, George Branch and Marty Stutz hold parts required for



prototype under evaluation, as compared to parts in foreground, previously required. At left are Ray Kincaid, Jim Mann, Mel Goodhart, Ray Sodomka, Joe Carlin, Don Brown, C. E. Royce with two types of another prototype assembly.

## Astro Son Finalist In Science Contest

Theodore G. Tanalski, 16, son of GD/Astronautics, T. T. Tanalski (Dept. 592-1), is San Diego County's lone finalist and one of 26 in California to reach the finals of a nation-wide scientific competition.

The contest is the 22nd annual Science Talent Search conducted by the Westinghouse Corp. which offers a \$5,000 scholarship as first prize.

Young Tanalski gained the finals for his work with an "inverted vacuum tube electrometer using the 6KB4," a measuring device to check high voltages with an extremely low current. Much of his work was conducted at Scripps Institute of Oceanography.

## New Tubing and Ducting Techniques Developed

Improved techniques in forming stainless steel tubing and ducting are goals of a unique research and development program currently centered in operations departments at General Dynamics/Astronautics.

Astronautics uses tubing and ducting made of thin wall stainless steel extensively in Atlas and Centaur launch vehicles. Ducting may be as large as 11 inches in diameter, and tubing as small as two and one-half inches. Gauges vary, although one of the more popular sizes is .012 gauge, about the thickness of a double edge razor blade.

Forming of angles and curves of this thin material is extremely difficult since the outside radius may be stretched below minimum thicknesses and the interior radius becomes wrinkled.

Thus, accepted production procedures call for forming parts in small sections which are then joined by butt welding. Numerous joints increase the possibility of leakage due to welding. And the only means of inspection is through detailed X-ray.

In the fall of 1962, E. D. Bryant, vice president—operations, called on operations departments to take part in a program to improve techniques for forming this material into missile components.

Tool design responded with simplified design of some components that would allow application of Astro-developed explosive forming and multi-flex draw form bending methods. Special tools were turned out as needed to allow sections to work on potential improvements. Naturally, many ideas were put forth, some accepted, some rejected. But every function took part.

Typical of objectives was the elimination of excessive welding and accompanying X-ray. Thus, seamless tubing assemblies looked promising.

In fabrication, a pair of tube bending specialists called for a new kind of ball-type mandrel with unusually close ball spacing. Then they started with a heavier gauge section of tubing that was to be shaped into a component with a 94-degree angle. The mandrel was inserted and both ends capped. Bottled air was forced inside for extra internal pressure and the angle

created by bending over normal forms. Where the metal stretched, the thickness was to exact measurements. Excess thickness at other points was taken away by chemical milling. This produced a one-piece component where three pieces were required previously.

Explosive forming made possible one-piece components in lieu of several and was used extensively.

As techniques from many points were developed, operations decided to apply them in building two prototype fuel transfer lines that had proven difficult to manufacture. The new approach eliminated 439 inches of manual welding, 44 detailed parts and 21 sub-assemblies required on regular production models.

And they were made at a saving of \$1,276 with more than a pound cut off their weight!

"To date, we have come up with a number of new ideas and techniques which may well be adapted for present and future programs," said J. P. Hopman, factory manager—fabrication and assembly. "They are the result of some outstanding work on the part of individuals and departments."

Bryant has indicated studies will continue in the program just as long as individuals and departments continue to come up with ideas. Each will be evaluated to see if it improves quality and reliability; reduces the quantity of detail parts and required forming tools; simplifies manufacturing and assembly operations; reduces scrapage; improves appearance; and reduces manufacturing costs.

"It would be impossible to mention every contributor to this program," Bryant added. "But their efforts may help us to strengthen our position in a highly-competitive business. We have reached a point in which we must rely heavily on the skilled hands and minds of individuals in programs such as this to insure our future."

## Heller Joins Astro In Value Control Management Post

(Continued from Page 1)  
ment. "Reduction of costs in all phases of our operation is of paramount significance to the division."

Heller joined GD/Astro from GD/Pomona where he had served since that division was organized in 1951. In his most recent assignment as value control coordinator he has scored outstanding successes. He is a nationally recognized value control authority.

A native of New York City, Heller is a mechanical engineering graduate of the University of Toronto. Joining GD/Convair in 1947, he brought with him experience acquired at Bell, Lockheed, Douglas, Ryan, and as partner in a consulting engineering firm.

At GD/Convair he filled assignments as design engineer and assistant program engineer. Upon joining GD/Pomona, he served as senior staff engineer, and later as senior design group engineer.

In his GD/Astro post, Heller will participate in inter-division, customer and industry value control activities.

## Space Surveillance Course Continued

Second semester of a graduate course in atomic and molecular physics and space surveillance opened at General Dynamics/Astronautics Monday (Feb. 4).

The course is instructed by Dr. Alex E. S. Green, GD/Astro manager of space science, and meets from 5 to 6 p.m., Mondays and Wednesdays, over a 20-week period in Bldg. 17, Room 10.

Designed as a follow-on course for students enrolled in first semester classes, the course is open to employees with a bachelor's degree in engineering or physics who have taken additional instruction in atomic or modern physics.

Register with Gloria, ext. 1935.

## Young Scholars To Tour Plant

Plans for conducting semi-finalists in the GD/Astronautics Management Club scholarship program on a plant tour as part of a day-long series of events were announced this week by the scholarship committee.

Semi-finalists will visit Astro March 16 to take a special test as part of determining winners in the program. The tour will follow with Management Club personnel as guides.

This year scholarships valued at \$800, \$400 and two for \$100 will be given to sons and daughters of Astronautics employees. Application blanks have been forwarded to all high schools near Astronautics facilities.

Entries must be the son or daughter, by birth or adoption, of an Astro employee on the payrolls Jan. 4, 1963, who has completed one full year of work with some General Dynamics division.

Applicants must be finishing high school during 1963 and must enter a college or university accredited by the American Council on Education during 1963. Winners may not accept any other scholarship given by General Dynamics, any of its divisions or Management Clubs.

Feb. 22 is the deadline for entering.

Judges for this year's finals will be: Mrs. Helen Cobb, San Diego City Council member; Robert D. McKay, director of admissions, California Western University; and T. Franklin Schneider, president and chairman of the board, San Diego Imperial Corporation.

Questions concerning the program may be directed to Keith Blair, committee chairman, at ext. 1073, Plant 71.

## Special PERT Seminar Held

(Continued from Page 1)  
cluding R. A. Wohl (SLV), R. A. Rafflesberger (Centaur), G. E. Putness (AWS), and G. G. Prentice (electronics).

Each project also sent its chief of schedule planning and control which included H. K. Capper (SLV), R. T. Lyles (Centaur), A. J. Braidic (AWS) and A. S. Paukovec (electronics). Rounding out the project attendees were chiefs of estimating, their alternates or counterparts, including C. H. Meyer (SLV), E. B. Smith (Centaur alternate), R. M. Williams (AWS) and A. N. Bowden (electronics).

D. L. Platt, Astro PERT development, who instructed the basic PERT Time Course, monitored the seminar as the 26th member. He will assist in setting up the Cost Course.

## GD/Astro Art Takes Honors

Eight pieces produced by General Dynamics/Astronautics art section (Dept. 126) were selected for display in the Exhibition of Western Advertising and Editorial Art in Los Angeles last month.

Three of the eight received awards of distinctive merit.

Honored as editorial art was a design featuring background material on the Atlas ICBM. Art director was Tom Suzuki, with credits listing Donald McQuiston as designer.

In the in-industry poster category, distinctive merit was recognized in a design encouraging use of safety hats, produced under direction of Stan Hodge, manager of art direction, and designed by Phil Kirkland.

A third distinctive merit award went to the "Priority 1" poster directed by Suzuki and designed by Burton Brockett.

Also selected for display in the show were three Hodge-Kirkland safety posters, plus a security poster directed by Suzuki and designed by Bill Young.

Selected for display in the company publication class was a Suzuki-McQuiston Atlas piece.

## Log Book Entries Service Emblems

**MAIN PLANT**  
Service emblems due during the period Feb. 1 through Feb. 15.

Twenty-five-year: Dept. 401-3, G. E. Rolston; Dept. 976-3, E. B. Maier. Twenty-year: Dept. 141-3, J. E. Patterson; Dept. 143-2, J. G. Bays; Dept. 480-0, H. K. Stahl; Dept. 641-1, A. L. Conrad; Dept. 718-0, R. G. Kinder; Dept. 759-0, L. L. Reed; Dept. 835-3, E. L. Sylvester; Dept. 970-0, H. H. Miller.

Fifteen-year: Dept. 143-5, W. L. Burkhalter, J. M. Conerly; Dept. 344-3, D. F. Westcott; Dept. 716-0, V. E. Dodds; Dept. 759-0, C. C. Hall.

Ten-year: Dept. 146-3, N. B. Carlton; Dept. 193-3, W. A. Baumgartner; Dept. 250-6, E. F. Johns; Dept. 290-4, J. W. Jackman; Dept. 322-7, H. C. Adams; Dept. 364-0, R. J. Riddell; Dept. 401-3, G. F. Zwicker; Dept. 403-1, R. J. Welsh; Dept. 451-0, R. L. Griffith; Dept. 454-0, H. F. Davis; Dept. 537-7, J. C. Stell; Dept. 568-4, H. B. Bard Jr.; Dept. 597-3, W. E. Pfanner.

**SYCAMORE**  
Twenty-five-year: Dept. 573-0, H. F. Hampt.

**VANDENBERG AFB**

Ten-year: Dept. 576-6, D. G. Gimber.

## Births

**MAIN PLANT**  
GREEN—Daughter, Carol Ann, 9 lbs., 2 oz., born Jan. 29 to Mr. and Mrs. Richard Green, Dept. 568-4.  
HAMMOND—Son, Brian Pieter, 7 lbs., 3 1/2 oz., born Jan. 16 to Mr. and Mrs. J. D. Hammond, Dept. 782.  
MILLER—Son, Timothy Irvin, 6 lbs., 8 oz., born Jan. 17 to Mr. and Mrs. Ray C. Miller Jr., Dept. 759.

## Deaths

**MAIN PLANT**  
JEWELL—Henry B., Dept. 451-0. Died Jan. 22. Survived by wife, Madeline, four children.  
MC MAHON—Oliver A., Dept. 851-0. Died Jan. 24. Survived by wife, Alma, and son, Jack.  
STRUKELEJ—William J., Dept. 545-3. Died Jan. 20. Survived by wife, Catherine, three sons, two daughters.  
SULLIVAN—J. F., Dept. 382-0. Died Jan. 25. Survived by wife, Dorothy, three sons, two daughters.

## General Dynamics NEWS

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Fort Worth Editorial Offices, Col. 72, Admin. Bldg., GD/Fort Worth, Mail Zone 0-50, P.O. Box 748, Fort Worth 1, Texas, Telephone PERshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

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**BSD HONORS**—Maj. Gen. W. Austin Davis, commander, Ballistic Systems Division, makes special presentation of "Commander's Award" to Astro's R. C. Harbert, center, as President J. R. Dempsey looks on. Harbert, now AWS project engineer, was honored for his work as manager of Astro operations during activation of Dyess AFB Atlas operational facilities.



# GD/Astro Designs Probes For In-Flight Launching To Study Missile Trails

Months of concentrated effort on a new General Dynamics/Astronautics program, Flight Launch Infrared Probe (FLIP), is culminating in actual production and test operations.

Development of these probes, first of their kind designed to study plumes of missiles during launch and in flight, is being conducted under a contract from Air Force Space Systems Division.

Current contract, covering research and development of the advanced space-age data collecting package, calls for six production units and three dummy test articles. Three of the production probes are due for delivery in March, the other three in June, with flight tests slated at the Atlantic Missile Range during spring and summer of this year.

Two successful dummy test firings were held at Camp Pendleton, Calif., just before the end of the year.

The FLIP, briefly, is a new concept in the gathering of information from rocket plumes, or gases ejected from missiles in flight. The probe units, containing highly-refined instrumentation, are inserted in launch tubes which are attached to the outside of the main missile booster. Probes are fired at different altitudes upon command from instrumentation within the units.

FLIP program director is Sam Ackerman, vice president and director of GD/Astro electronic programs, with Dave Fox, project engineer.

Palmer Smith's passenger pod group is responsible for the design of structure which will attach to the booster. Dept. 756, under direction of Bob Carman, has been fabricating and assembling the structure.

Dr. F. C. Harshbarger, senior staff scientist in Astro space science laboratory, is responsible for technical direction of the program with Mark Dorian acting as coordinator of contributions from the several Astronautics' groups and outside companies involved.

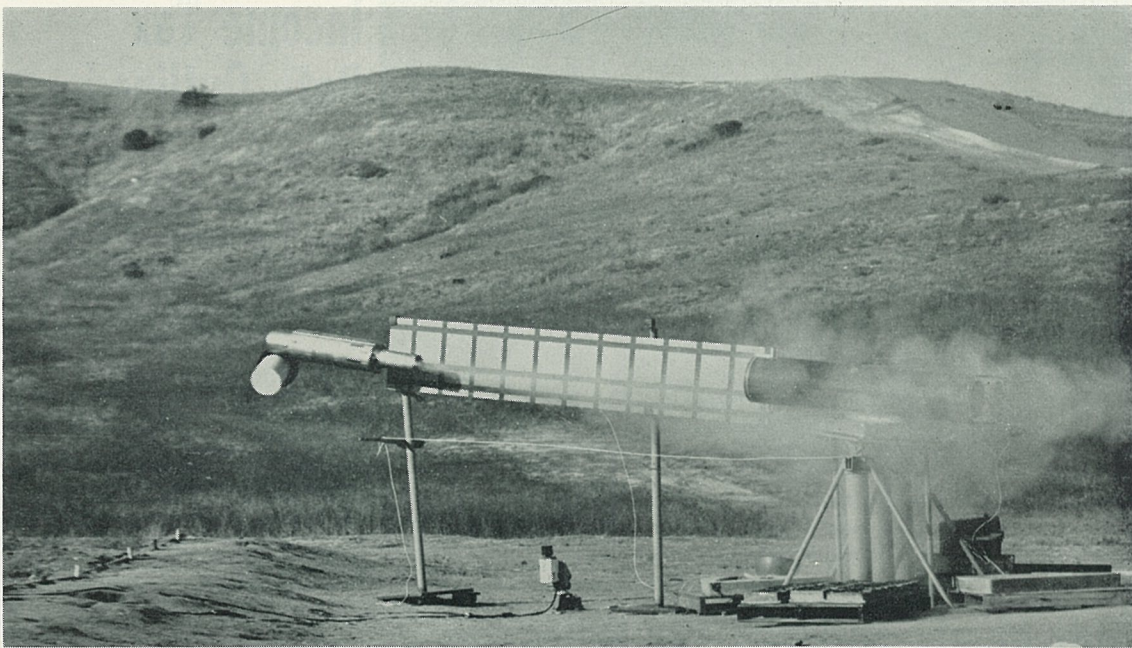
Other Astro groups contributing to the program, besides those mentioned, include the programming section which developed the programmer to direct the probe's mission; infrared/optics technology group of Astro applied research laboratory which designed and fabricated the three-channel radiometers (General Dynamics NEWS, Nov. 7, 1962).

Other components, including telemetry package, antennas, bat-

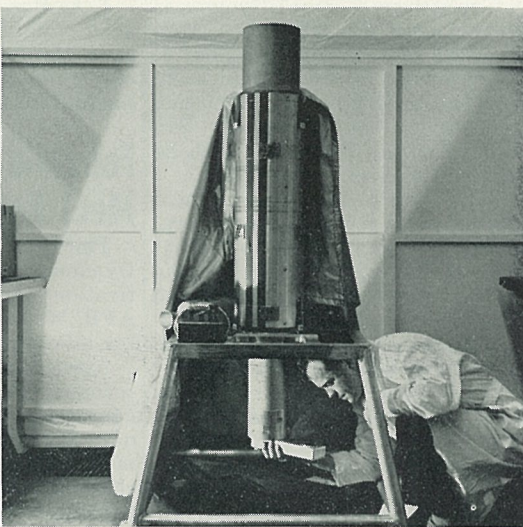
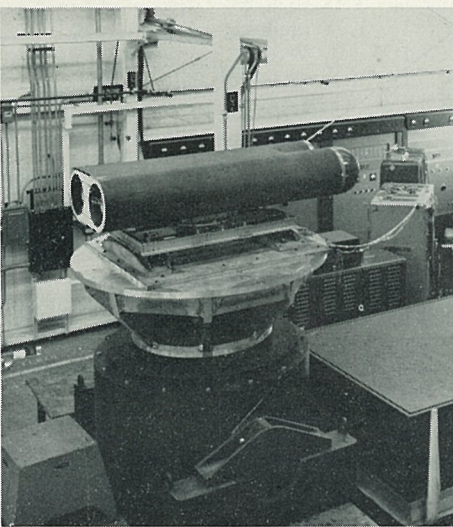
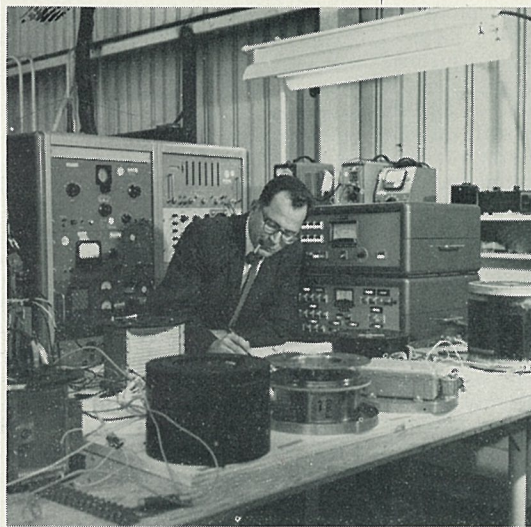
tery package, one-channel radiometers, rapid-scan monochrometers, magnetic aspect sensing devices, are furnished by subcontractors.

Dynamics test lab engineers of Dept. 568-1, with support of Dept. 756 technicians and mechanics, now are assembling the various components in a laboratory area in Bldg. 72 at Plant 1.

This assembly and test area covers 4,000 square feet along the north side of the Plant 1 laboratory building. Adjoining is a 20x30-ft. optics calibration clean room where optical calibration will be accomplished in a dry nitrogen chamber under full spin. Serving as test engineer during integration and testing is B. L. Beck.



**PROBE LAUNCH**—Probe leaves launcher during test firing at Camp Pendleton, near San Diego. It was spinning at 600 rpm at time of photo. Grid measures straight line of launch. White object at probe's tip is launcher's detachable cap, jettisoned at moment of firing.



**PLUME STUDY**—At left, Mark Dorian, FLIP project coordinator, is surrounded by instrumentation and components of newly-developed probes, designed to study missile plumes. At right, J. H. Keller, GD/Astro Dept. 568-3 test engineer, aligns rocket

motors on jig holding one of first test probes. In center is launcher structure undergoing vibration testing at GD/Astro's Kearny Mesa engineering test lab. Many departments have contributed to development of the probes.

## GD/Convair Builds Massive Launcher For NASA's Little Joe II Vehicle

Sections of the first massive launcher for the Little Joe II launch vehicle, being built at General Dynamics/Convair under a National Aeronautics and Space Administration contract, are awaiting assembly in experimental.

One of the largest structures ever designed and built at GD/Convair, the launcher, with steel beams 30 inches deep, will have a total weight of nearly 100,000 pounds—three times that of an F-106! Heaviest subassembly weighs 30,000 pounds.

Details and subassemblies of the launcher have been built in Dept. 401, tool manufacturing, in Bldg. 4 at Plant 1. The subassemblies of the first structure now are going to experimental in Bldg. 5, where they are painted, positioned, and assembled. The launcher will be fitted with electrical circuitry and assembled in experimental yard where it will be mounted on short circular rails, loaded with weight, and proof tested.

**"Launchers for the Little Joe II booster required down-to-earth design to keep them low**

**in cost, simple, efficient, reliable, and easy to use," said J. B. Hurt, Little Joe II program manager.**

"They must be heavy enough to support a solid propellant-type booster and payload that could weigh as much as 270,000 pounds, and withstand pressures and temperatures as high as 225 pounds per square inch and 5,000 degrees F. from motor thrust as high as 800,000 lbs."

The huge launcher is designed to swivel through a 140-degree arc, swinging the booster away from the tower and aiming it down range accurately and under control within seconds of firing time to account for shift in winds. The launcher can be aimed at elevations between 75 degrees and vertical position.

Base of Little Joe II will be 14 feet off the ground when positioned on the giant launcher. The booster will rest "lightly" on six points supported by 8-inch tubes. In addition, the vehicle is supported near the top of the booster by retractable arms which release as the motors fire.

The launcher has been built to

stand up for two years of hard usage, or through 20 launchings, with minimum refurbishing between firing, and is so constructed that damaged parts may be individually replaced. Its bulk has made it necessary to build it in sections so that it can be transported to launch sites where it will be assembled.

"The launcher is designed so that it can be easily adapted to a number of launching sites—even those that are 'primitive' compared to well-established sites," continued Hurt.

First firing tests for the Little Joe II vehicle and launcher are set for mid-year at the White Sands Missile Range.

### 'MANAGE' PUBLISHES POMONA'S ARTICLE

William L. Piel of GD/Pomona is author of an article "(F/A) Plus (C/T) Equal S" published in the January issue of Manage, the National Management Association magazine.

The formula, Piel explained, is "facts" reduced by "analysis" plus "conclusions" reduced by "tests" equals "solutions."

## Al Glaser Appointed To National Panel

Al Glaser, associate counsel in GD/Fort Worth's legal department, has been appointed to the national panel of arbitrators of the American Arbitration Association.

The non-profit association is devoted wholly to advancement of the knowledge and use of voluntary arbitration.

The panel functions in 1,600 American cities, and includes some 13,000 men and women specialists.

## Minn. U. Establishes Nestingen Memorial

Gifts totaling \$1,453.50 were accepted last month by the University of Minnesota, establishing the Irvin M. Nestingen Memorial Loan Fund, in memory of the late General Dynamics executive.

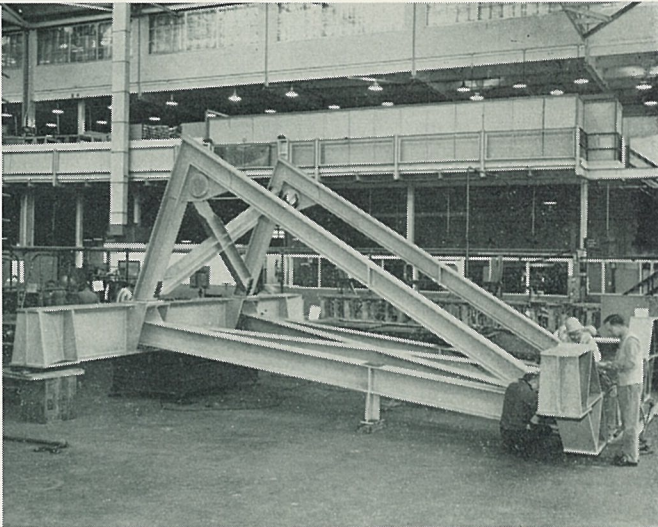
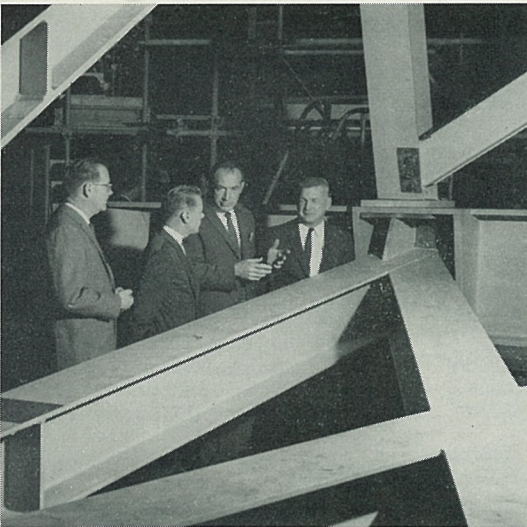
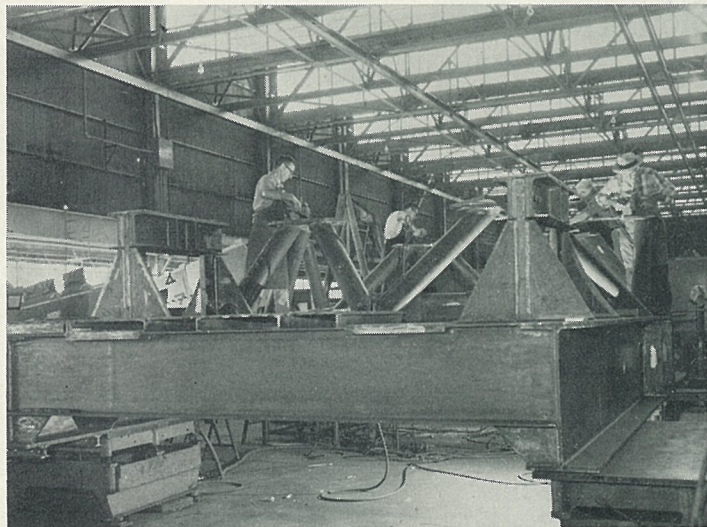
Mr. Nestingen lost his life March 1, 1962, in the crash of an airliner in New York. Friends and associates created the fund to aid engineering students at the University in his memory.

The University Board of Regents last month expressed appreciation for the donations.

## Scientist Is Speaker On Meteoric Impact

Dr. R. F. Rolsten, a General Dynamics/Astronautics staff scientist, was guest speaker at the Jan. 21 meeting of the Los Angeles Chapter, Society of Aerospace Material and Process Engineers.

The Inglewood meeting topic for Dr. Rolsten was "Behavior of Materials When Subjected to Hypervelocity Meteoric Impact."



**GIANT TAKES SHAPE**—At left, P. F. Heberer, C. G. Jones, Whitey Liegler, G. S. Fletcher, all GD/Convair Dept. 401 weld supports on first Little Joe II launcher bed in tool manufacturing before it goes to experimental for assembly. Center shot shows O. W. Sweetland, tool manufacturing superintendent; Vince Cernuto, assistant

to manager of manufacturing; N. R. Keough, experimental superintendent; H. W. Meyers, tool manufacturing foreman, framed by huge steel beams of launcher base. At right, Wally Toomire (kneeling), Guy Roberts, Harry Alexander, of Dept. 131, tighten bolts on structure in experimental.





WITH THANKS—President J. R. Dempsey, in capacity as board chairman for Greater San Diego Science Fair, is surrounded by GD/Astro scientists and administrative employees to whom he presented certificates of appreciation.

## Individuals Honored For Roles In San Diego Science Fair

Twenty-one General Dynamics/Astronautics employees were honored recently by President J. R. Dempsey who presented them with certificates of appreciation for service to the Greater San Diego Science Fair, for which he is board chairman.

This year's Fair will be held during early April in the Federal Bldg., Balboa Park. As before, it represents top science exhibits prepared by students and selected from local fairs held at San Diego area schools. Over 300 exhibits will be displayed.

This year, GD/Astro's Jack Croft, chief of educational services, will serve as chairman of the Fair judging committee, a post held in 1962 by Emory Thurston. Thurston will assist.

Receiving certificates from Dempsey for service in staff capacities were Ross A. Evans, Harold Sicard, Laura A. McGraw, Sidney Albert, Croft and Thurston.

Honored for participation as judges were Drs. Harold D. Adelson, David H. Garber, Samuel Kaye, J. M. Maughmer, Orlo E. Myers, R. Fred Rolsten, W. J. Scharf, J. B. Sutton Jr., and W. L. S. Wu.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**ASTRO LENS** — Meeting 7:30 p.m., Feb. 17, Photo Arts Bldg., Balboa Park. Quarterly contest, unique movie.

**ASTRONOMY** — Business meeting 7:30 p.m., Feb. 9, ARA Clubhouse. Mirror grinding, 7:30 p.m. each Friday.

**BALLROOM DANCING** — New beginners' class closes after session at 7:30 p.m., Feb. 11, ARA Clubhouse. Twelve-lesson series, \$9.

**BRIDGE** — Play nights Fridays, 7:30 p.m., ARA Clubhouse.

**CAKE DECORATING** — Classes meet 9-10:30 a.m., Thursdays, starting Feb. 14.

**DANCE** — St. Patrick's Day affair, March 16, International Room, El Cortez Hotel. Tickets 75¢ per person at employee services outlets.

**GOLF CLUB** — Tournament Feb. 16, 17 at Rancho Bernardo. Starting times, ext. 1111.

**ICE SKATING** — Trip to LA Blades hockey game, Feb. 23. Reservations at employee services through Feb. 15. Repeat trip to Big Bear, March 8, 9, 10.

**ROCKHOUNDS** — Meeting 7:30 p.m., Feb. 13, ARA Clubhouse.

**RUGBY** — Weekly workouts, 5 p.m., Wednesdays, ARA baseball diamond.

**SNOW SKI** — Meeting 7:30 p.m. today (Feb. 6), ARA Clubhouse. Big Bear trip Feb. 23-24. Reservations with Gene Rockefeller, ext. 1581, by Feb. 11.

**SQUARE DANCING** — Beginners' class open Feb. 12 and 19, 8 p.m., ARA Clubhouse.

**TEEN CLUB** — Regular dance, 7:30-11 p.m., Feb. 16, ARA Clubhouse. Music by "Del-Fis." Admission 25¢ with membership card.

J. F. Haskins, E. W. Schwartz, Joan Sherley, T. T. Tanalski, John Breeze, and W. H. Wrench also received certificates for judging services.

## Fairchild 'Alumni' Meet For Reunion

Thirty-six veterans of General Dynamics/Astronautics base activation operations at Fairchild AFB, Wash., gathered last month for a "reunion" in San Diego.

Attending were W. F. Chana, formerly GD/Astro manager of operations at Fairchild AFB and now Sycamore Canyon Test Site manager, members of his Fairchild staff, other management personnel, and their wives.

The group's special guests were Col. Thomas S. Jeffrey Jr., formerly SATAF commander at Fairchild AFB; Maj. Edward DeBrowski who served on his staff; and GD/Astro's E. J. Huntsman, formerly manager of E and F Atlas bases.

Chana served as host for the informal dinner in the Executive Room, Sands Hotel.

## GD/Astro Daughter Named Turf Queen

Donna Larson, 17, daughter of GD/Astro's Mrs. Perne Larson, Dept. 101-7, and D. C. Larson, Dept. 571-2, at Cape Canaveral, will reign as queen of the Valentine Ball at Del Mar Turf Club, Feb. 9.

The San Dieguito high school senior will be crowned Miss Sweetheart of 1963.

Among other honors, Donna was chosen earlier as Miss World Poinsettia by the Leucadia-Encinitas Flower Growers' Assn., and was Homecoming Queen at her school last year. She has been elected activities manager at the school this semester.

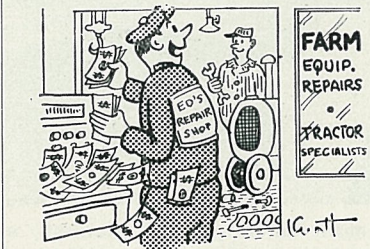
## Skiers Slate Outing On Big Bear Slopes

Plans and reservations for a ski trip to Big Bear are on the agenda for the meeting of ARA Snow Ski Club today (Feb. 6) at 7:30 p.m., in ARA Clubhouse.

The trip is planned for Feb. 23-24, with reservations accepted through Feb. 11 by chairman Gene Rockefeller, ext. 1581.

Meeting will also feature movies, door prizes and a business session.

President Hal Moore has issued an invitation to all Astro ski enthusiasts to participate in races scheduled in March. Additional information is available from Ken Partain, race chairman, ext. 4517.



"This was one of those wonderful days when everything went wrong with everybody's tractor."

## Income Tax Data Outlined

General Dynamics/Astronautics employees itemizing 1962 income tax statements may deduct certain amounts withheld from their paychecks over the past year.

The cost of dependent's insurance may be claimed by those itemizing medical deductions. Amounts deducted changed at least twice during the year and vary for different union-represented groups. Thus, those who joined, withdrew or changed unions and those who did not work a full year for Astro may obtain exact deduction schedules from employee services.

Those who did not change status may deduct the following totals: non-represented hourly and salaried, \$143.28; IAM members, \$142.81; IBEW members, \$144.28; UWA members, \$145.28; UPPA members, \$152.28; and EAA members, \$154.28.

Disability insurance applied to hospitalization may be a medical deduction. Disability insurance deductions total one per cent of salary to a maximum of \$4,100. Employees who worked outside of California may claim 14.6 per cent of the largest amount appearing on paycheck stubs under "DI."

California-based employees are affected by a May 1 switch from a voluntary plan to a California State Plan. Here's the easiest way to figure deductions: check total "DI" deductions appearing on last check stub for April; take 14.6 per cent of that and claim it as a medical deduction; subtract the April "DI" figure from the "DI" figure shown on the last paycheck issued for 1962; enter the difference as a TAX deduction.

Employees are also reminded that their contributions to Con-Trib-Club may be claimed as a charitable donation. Those who contributed to the Tri-Hospital Building Fund paid into this charity through the final pay period in June.

## Rugby Team Braces For Season Matches

ARA's fledgling rugby team enters league competition this month with increased experience.

The ARA squad yielded recent games to University of San Diego and San Diego State College. The former match saw Astro foundering 15-0, with troubles attributed to penalties and inexperience.

Up-coming contests will pit ARA against South Coast Feb. 14 at Santa Ana, and on Feb. 17 the team will face a local San Diego unit.

Prospective rugby players have been asked to call ext. 1111 for information, or attend practice sessions held each Wednesday at 5 p.m. on the ARA baseball diamond.

## Beginning Dancers Have Final Chance

Next Monday (Feb. 11) at 7:30 p.m. will be the final opportunity for beginners to join an ARA-sponsored ballroom dance class at ARA Clubhouse.

Organizational meeting for this group was Feb. 4.

Beginners will dance each Monday at the same time over a 12-week period. Instruction will be by professionals with each student paying \$9 for the full course.

## Astronomers Plan Workshop Meets

A new meeting date and a series of special workshop sessions have been announced by members of the ARA-sponsored Astronomy Club.

The club now meets at 7:30 p.m. on the second Friday of each month in ARA Clubhouse. Also, each Friday at 7:30 p.m., special mirror grinding sessions will be held until work is completed in preparing ARA's new observatory.

## Recreation Council To Convene at Astro

Astronautics Recreation Association Clubhouse will be a key location during the 13th Annual National Industrial Recreation Association Western Region Conference coming up Feb. 15-17.

The clubhouse will be center of all meetings and business sessions as well as exhibit headquarters for the conference. The Sands Hotel is official conference headquarters.

Dick Mitchell, GD/Astro's employee services chief and a N.I.R.A. director, is conference chairman.

Committee members include GD/Convair's Pete Beyrer; GD/Pomona's Herb Naish; and GD/Astro's Ray Mendoza, Don Glasser, Ezra Johnson, Marty Stutz, Bill Dawsey and Bryan Weickersheimer; plus other local recreation leaders.

Expected to attend are some 150 professional and volunteer recreational leaders from seven states on the West Coast. They will take part in four major business sessions, plus meal-time meetings. Recreation leaders will serve as panelists at each session, while Harold Keen, Al Couppee, Lute Mason and Fred Lewis will act as moderators.

Speakers include Biff Gardner, Miss Eden Ryl, Ted Banks, Don Neer and Ed Mitchell. The last two are executive secretary and president of N.I.R.A., respectively.

Members of many ARA activities will stage special demonstrations on Saturday afternoon. All ARA Recreation Area facilities, including the Clubhouse, will be closed to all but conference delegates Saturday (Feb. 16) and Sunday.

★ ★ ★

**VANDENBERG AFB** — Teams representing ARA here in three sports will enter telephonic tournaments planned in conjunction with the Western Region National Industrial Recreation Association Conference Feb. 15-17.

Results of events played locally will be telephoned to the conference in San Diego where they will be compared with results of similar competitions held throughout the Western U. S.

## Barinka Appointed To Post at GD/Astro

Appointment of S. J. Barinka as general foreman at General Dynamics/Astronautics was announced last month by E. D. Bryant, vice president—operations.

Barinka will report to J. P. Hopman, factory manager, for special assignment.

Veteran of more than 20 years' service in GD/Convair field operations, Barinka joined that division in 1940 as superintendent of B-24 field operations.

He was subsequently superintendent of B-36 field operations at GD/Fort Worth during 1951, and upon return to GD/Convair served as superintendent of jet transport field operations during the Convair 880 program.

## INDUSTRIAL SECURITY ASSIGNMENTS CITED

Two key security assignments have been made at General Dynamics/Astronautics by W. E. Bowman, manager of industrial security, industrial relations department.

George W. Wilson, formerly Astro security officer at Walker AFB, has been named security officer with responsibility for the visitor's office.

Fire Chief A. C. Anderson will head Astro's Civil Defense and Disaster Control organization in addition to his other duties.

## Astro, Convair Set Salvage Schedule

Salvage yard schedule at GD/Convair and GD/Astro for next four Saturdays is:

GD/Astro—Feb. 9, 23.

GD/Convair—Feb. 16, March 2.

Heading ARA teams here will be Leo Bernitz (trap shooting), Don Wilson (bowling) and Jim Batson (golf).

Plans also call for ARA officers from Vandenberg AFB to attend the San Diego conference. Delegates include Ross Workman, employee services representative; Gene Sims, ARA president; Ernie Millar, vice president; Arlene Barnell, secretary; and Auggie Daddi, treasurer.

## Repeat Hockey Trip in Offing

Although plans were altered at the last minute, ice skaters from Astronautics and Convair report such an outstanding visit to witness ice hockey that a repeat trip is planned for Feb. 23.

Lack of response to a Jan. 26 trip caused those interested to give up a chartered bus in favor of private cars. However, a 10-minute overtime and a 6-6 tie between the Los Angeles Blades and San Francisco Seals made the trip worthwhile. Too, participants were part of a record crowd of 13,942 watching the contest.

Plans for the next trip call for chartered buses to depart Astro parking lots at 3:30 p.m. (Saturday), stop for an hour to dine at Knott's Berry Farm, then proceed to the game. Return arrival will be about 1 a.m.

Cost per person for round-trip and a \$3.50 reserved ticket at the arena will be \$7.

However, reservations must be made through employee services by Friday, Feb. 15.

## SECOND SKATE TRIP PLANNED IN MARCH

Response to a joint ARA-CRA ice skaters' Winter Weekend at Big Bear Lake this weekend (Feb. 8-10) was so great a repeat is planned for those who were turned away this month.

Another visit will be made March 8, 9, 10.

Cost per person will remain \$11 and include two night's lodgings at Wawona Lodge and three meals. Lodge rooms of varying sizes are available, plus house-keeping units for families.

Some 50 stand-by reservations have been accepted for the February trek and about 100 persons turned away. Ice skaters hope those who can not make the February trip will be on hand in March. Reservations for the latter are being accepted now at employee services outlets.

## Registration Open For Spanish Class

Beginning and intermediate Spanish courses, taught by Jim Hardison, GD/Convair Dept. 15, at Hoover Adult High this semester, will be open for registration through Feb. 20.

Any General Dynamics person wishing to enter either course may enroll at class meetings at the school, 4474 El Cajon Blvd., said Hardison.

Beginning course is held Wednesdays, 6:30-9:30 p.m. in Room 206. Intermediate classes are Mondays, 6:30-9:30 p.m., Room 219.

For further information call Hardison evenings at his home, phone 276-5805.

## Astro Folk at Plant 1 Served by NEWS Boxes

GD/Astro people located at Plant 1 may pick up copies of Astronautics edition of General Dynamics NEWS from boxes located by the time clock on third floor of Bldg. 51 and at Col. E-8 on mezzanine of Bldg. 4.

Groups located in other areas within Plant 1, who are not receiving Astro editions, are urged to call the NEWS office, ext. 1071, Plant 1.



## Sports & Recreation



**TOP HONORS**—Among trophy recipients honored at recent ARA Riding Club meeting was Joanne Lee, shown here receiving wall plaque for most points earned during 1962 shows. Small trophy honors Joanne's work as editor of club newsletter. President Bill Penn made presentation.

## ARA Golf Club to Play Rancho Bernardo Links

Starting times will be assigned through Feb. 13 to ARA Golf Club members wishing to enter this month's sweepstakes Feb. 16 and 17 at Rancho Bernardo.

Assignments are made by ARA Headquarters, ext. 1111.

In the January tournament at Carlton Oaks, Ken Clotz and Tom O'Laughlin fired 77s for low gross honors in the 0-14 handicap bracket. Trailing were Wynn Hines with 79 and Paul Hooten with 81.

Low nets in this class were 71s from Ray Demitrowitz and Phil Raney, 72s from Mort Smith, John Sentovic and Dick Hart, and 74s from Frank White, Harry Richards and John Kring.

Chuck Cearley's 84 led gross scorers in the 15-20 category, trailed by 88s from Ray Cleary, Chuck Pope and Russ Luker, and 89 by Gene Petzen. Low net leaders were Cliff Gordon (68), D. G. Slizer and Tom McCubbin (71s), and Brandy Neal (74).

In the 21 and over class, Ron Reekers' 94 was low gross. E. L. Hartsock shot 97, Jim Rose 99, and Otis Tucker and Bob Hibbs,

### J. J. 'Mike' Curley Feted on Retirement

Astronautics friends of J. J. "Mike" Curley, former executive development administrator, staged a series of events prior to his recent retirement.

Industrial relations friends took part in a farewell luncheon held Jan. 17 at Valley Ho. Educational services held a "coffee break" party Jan. 25. Friends from controller functions, about 45, were on hand for a dinner at Midway Chuck Wagon Jan. 29.



**REPEATERS**—For second straight year Airmailers (Dept. 170) have copped title in ARA's flag football program, winning championship game over Material (Dept. 832-1). Team members, left to right, back row, are S. L. Lakes, Dennis Weinmeister, H. H. Wells, R. Balsley, R. M. Pitts, U. N. Eatmon and C. L. Root. Front row are T. Gonzales, J. P. Wayman, C. A. Johnson, F. B. Buchoit, C. E. Adams and J. R. Blake.

## Atlas to Go On Exhibition In ARA Area

Next Saturday (Feb. 9) is the day.

Barring complications, an effort extending back two years will be climaxed with erection of an Atlas ICBM as a permanent display in the General Dynamics/Astronautics Recreation Association Area.

The missile, Atlas 2-E, having served out its useful life as a test bed, was made available by the Air Force as a tribute to the men and women who designed and developed Atlas.

Astronautics Management Club volunteers on their own time refurbished the missile as a club project.

W. P. "Bill" Shine and Don Crayton headed the club effort. Marty Stutz was a key figure in liaison with Dick Mitchell and Ray Mendoza of ARA.

Atlas 2-E was placed in "stretch" and volunteers stripped it of bulkheads, etc. Some 150 sheets of plywood bonded by plastic resin were added to the interior to provide rigidity. External fixtures were replaced and the tank refurbished. Over 2,500 manhours went into the project!

Lt. Col. George W. Johnson, Astro AFPR office, acquired two Strategic Air Command "mailed-glove" insignia for the sides. Topping the missile will be a wooden mockup of a Mark III re-entry vehicle.

When raised into position, Atlas 2-E will have the outward appearance of series "E" missiles currently on duty with SAC forces.

Many have been actively engaged in the project including Ray Sodomka, Lynn Richardson, Merv Payne, N. E. Lara, A. M. Dale, Fred Mattern, M. M. Goodhart, Bill Valentine, O. H. Johnson, Maurice Beam, Don Tesereau, C. T. Clark, Armand DuFour, Al LeBlanc, W. Heinold, Joe Dragonetti, Wes Muse, Paul Callahan, Ed Russell, Jerry Olson, H. C. Phillips and others.

The display will stand 104 feet tall.

## Lens Club Will Show Old Film

Astro Lens, ARA camera club, has selected officers for 1963, with the slate headed by Jim Mildice, Dept. 864-2, president. Joe Kayda, Dept. 671-2, is vice president, and Barbara Franc, Dept. 142-1, secretary-treasurer.

A two-part program is slated for the group's next meeting, 7:30 p.m., Feb. 17, in Photo Arts Bldg., Balboa Park.

Featured will be the club's first quarterly contest of the year, with entries accepted in both black and white, and color (transparencies).

Following the contest, a 1927-vintage 16 mm movie will be shown. Subject is return of Charles Lindbergh to San Diego after his solo Atlantic flight. Included among the welcoming party is Will Rogers.

## Controller's Dance Set

Members of GD/Astro controller's department, including those in financial control sections of project organizations, will hold a Valentine dance, Feb. 16 at El Cortez Hotel.

Scheduled from 8:30 p.m. to 1 a.m., the affair will feature music by Bob Hazelett's orchestra, door prizes, and a beauty contest. It will be held in the hotel's Caribbean Room.

Tickets at \$1.50 per person are now available from representatives in all controller's areas, where additional information can also be obtained.

Contacts include Joyce Eveland, ext. 1023, and George Hall, ext. 3774.



**SWEET TEST**—Instructors Gil Hutter, left, and Jack Malone, second from right, and members of recent ARA-sponsored cake decorating class show off their "graduation exam creations." New class in popular event begins Feb. 14 for eight-week period, meets each Thursday at 9 a.m. in ARA Clubhouse.

## Another Cake Decorating Class Scheduled to Start on Feb. 14

Ladies (men, too) with a sweet tooth and an eye for decoration may be interested in another session of ARA's popular cake decorating instruction which opens Feb. 14.

Extending over a period of eight weeks, the class will meet in ARA Clubhouse from 9 until 10:30 a.m., each Thursday.

Gil Hutter, manager, and Jack Malone, assistant manager, of Astronautics' Prophet Co. cafeteria staff will serve as instructors.

There is no charge for the course, although students will provide their own supplies and decorating utensils. Supplies are available at cost. No advance registration is required.

Fifteen students took part in the class just concluded, including one man. Interest shown by others indicates a good number of students are in prospect for the new class.

Graduates are issued special certificates.

## Two 'Open Nights' Remain to Join Sq. Dancers Before Door Shuts

Just two nights remain for joining the "do-si-do" set at Astro before it closes the door for another eight months.

Naturally, the "do-si-do" set are the Astronauts, ARA sponsored square dancers at Astronautics. Each year they welcome newcomers to take part in beginning activities on two occasions, spring and fall.

Initial beginner's class session was conducted Feb. 5. But students will be accepted Feb. 12 and 19. Classes are conducted in ARA Clubhouse each Tuesday from 8 until 10 p.m. Veteran instructors Dot and Van Vander Walker conduct the classes, carrying students from basic steps into the dips and swirls and spins that make it one of the most popular recreational activities.

Although the Astronauts encourage "couple" registration, singles will be accepted as long as partners can be obtained. Normally, extra men and women are on hand.

No advance registration is necessary.

More advanced dancers are invited to meet with the regular

Astronaut group each Thursday evening (8 to 10) at the clubhouse.

### Gordon McPherson .22 Pistol Winner

ARA Commissioner Gordon McPherson edged Roland Schneider, 291-289, in master class of a .22 Camp Perry Police Course match fired Jan. 27 at San Diego Police Pistol Range by ARA Pistol Club.

In expert class, Bill Jungk's 278 topped 270 from Ron Hughes, John Bennett (268) and Bill Worthington (257) led sharpshooters, and Ralph Jungk bested Art Lewis 236-234 in the marksman category.

Schneider fired 286 to top Roscoe Anderson's 282 in the master class round of a .22 Short National event.

Other leading scorers included Bill Jungk (268) and Angrim Carlson (258) in expert class; Bennett (261) and Worthington (252) in sharpshooter class; and Lewis (221) and Dave Moss (213) in the marksman bracket.



**FORWARD EIGHT**—Last September these Astro square dancers were beginners. Now they show polish applied during special ARA-conducted classes and graduated last week. New class for beginners will be open two more weeks (Feb. 5 and 12) and then will close until fall. Sessions are held Tuesdays at 8 p.m. in ARA Clubhouse. (Photo by Les Blakely, Astro Lens).



## Workhorse of B-58 Test Program Grooms Pilots to Fly Valkyrie

B-58 No. 7, one of the real workhorses during the extensive Hustler flight-test program, is now being used to groom pilots for flights in the Mach 3 B-70 Valkyrie.

The plane was recently assigned to Edwards AFB Flight Test Center, where the Air Force is using it to conduct training programs for XB-70 flights.

Al White, chief test pilot for North American Aviation's Los Angeles Division, recently flew No. 7 as part of his training program for the Valkyrie's first flight, scheduled for the near future.

White was quoted as saying the

Hustler provides an excellent training platform for future pilots of the XB-70 in that it acquaints them with some of the handling characteristics they will experience later and in greater proportion when they fly the Valkyrie.

Before being turned over to Air Force at Edwards AFB, No. 7 was stripped of the heavy instrumentation used over a period of months in the air loads program.

Prior to that, No. 7 was used in a number of other important test programs, including sudden engine failure tests and engine performance demonstrations.

## Government Management Areas Redefined For Cape Canaveral

Government agencies' management responsibilities in Cape Canaveral area operations have been redefined in a new agreement announced recently by Department of Defense (DOD) and National Aeronautics and Space Administration (NASA).

The agreement states that DOD will continue as single manager of Atlantic Missile Range (AMR) which extends from the Cape to the Indian Ocean, while Air Force continues (under DOD authority) as host agency in existing Cape Canaveral launch area.

The new 87,000-acre Merritt Island launch area north and east of Cape Canaveral, however, will be under management of NASA's Launch Operations Center, which will also act as host agency.

Merritt Island is being developed to handle very large launch vehicles such as the Advanced Saturn. The facility will include 52-story Vertical Assembly Building, plus a 40-building industrial support area.

Most specific mission functions both at Cape Canaveral and at Merritt Island will be performed by DOD and NASA in their own behalf, regardless of location. DOD will retain responsibility for certain fundamental range functions in both areas.

NASA's Launch Operations Center is headed by Dr. Kurt Debus, while Maj. Gen. Leighton I. Davis, USAF, commands Air Force Missile Test Center (AF-MTC) which operates AMR.

## New Compact Radar Includes Contour Flying and Mapping

A new compact radar, combining aircraft terrain following, contour flying, mapping and navigation capabilities, has been developed by General Dynamics/Electronics at San Diego.

The second-generation radar design, based on existing GD/Electronics systems now operational in supersonic military aircraft, weighs less than 140

pounds. It can be adapted for use in a variety of aircraft, from slow observation planes to newest high performance jets, because of its wide range of antenna stabilization, light weight, low-power consumption, and compact design, say GD/Electronics engineers.

The system's terrain following and contour flying capabilities at low levels are based on a flight-proven terrain following radar, formerly known as terrain avoidance radar, developed by GD/Electronics. (This radar completed a several-month stretch of test and demonstration flights late last month.)

In terrain following, the radar enables an aircraft pilot, or autopilot, to fly blind at a fixed altitude above the ground, clearing all obstacles ahead. In contour flying, the radar not only allows constant altitude flight over all obstacles, but also shows the pilot how to fly around major obstructions.

The system will operate by automatic or manual control. A radar scope display shows the terrain features ahead in outline form.

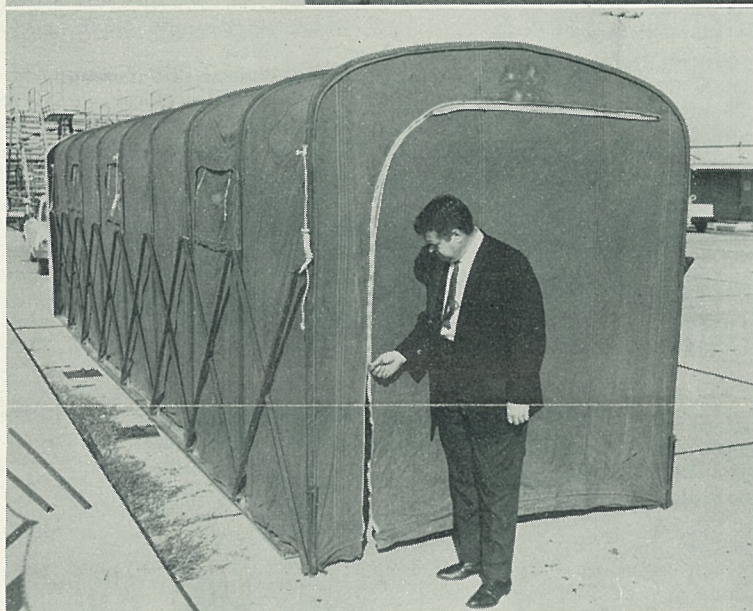
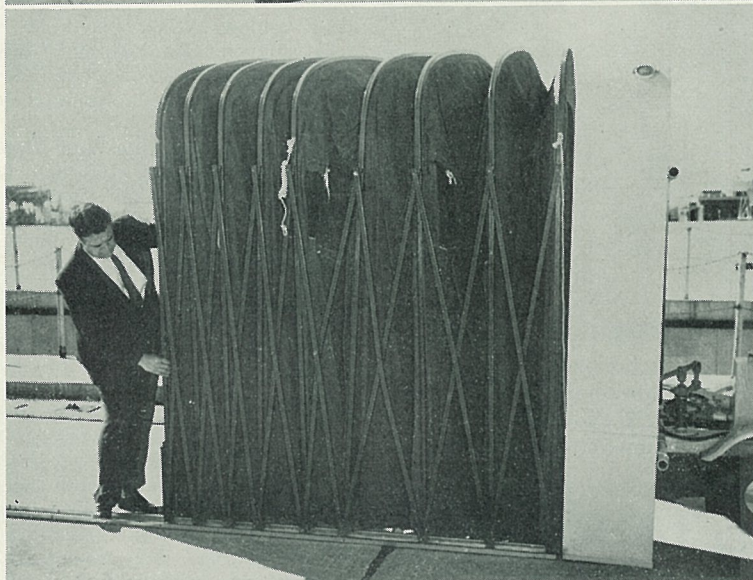
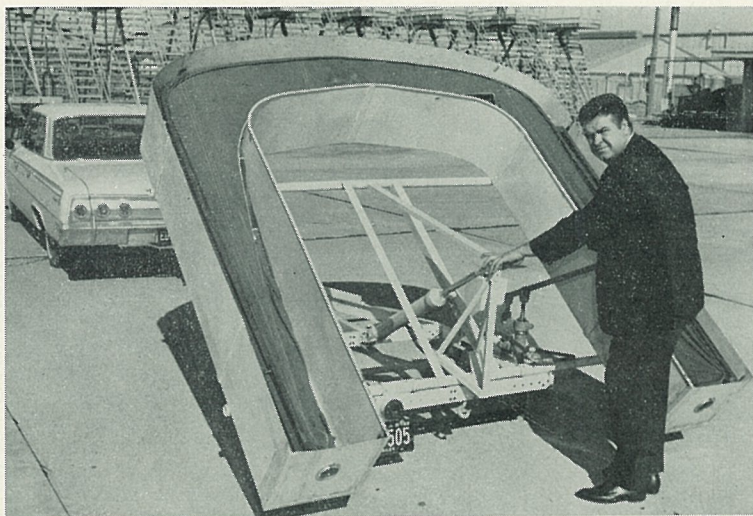
In addition, the new lightweight system will be able to produce maps of terrain features thousands of feet below the aircraft.

## Dynamics Products Shown Convention

Products of two General Dynamics divisions were exhibited last week at the 1963 National Winter Convention on Military Electronics at the Ambassador Hotel in Los Angeles, Jan. 30-Feb. 1.

A booth sponsored jointly by GD/Pomona and GD/Electronics—San Diego displayed models of the Pomona-built Tartar and Mauler, and GD/E radar for the A3J, and terrain following radar.

GD/Electronics men attending included J. W. Colvin, manager of plans and programs; Payne Johnson, manager of communication; J. E. Bowen, manager Navy and Marine Corps requirements; D. O. Campbell, manager AF and FAA requirements; and L. S. Butler, senior electronic engineer.



"INSTANT" TENT—Sequence photos show Phil Cummins, Dept. 15 project liaison, in process of erecting collapsible tent. Cummins uses hydraulic pump to erect tent, which fits into 11-inch deep container. In next step he pulls tent out on steel rails, ordinarily used only on soft terrain. Below, Cummins zips end and job is finished.

### Quickly Folded

## 'Instant' Tent Devised; Folds Into Horseshoe

When rain threatened postponement of an outdoor class in radiation detection at General Dynamics/Fort Worth, Phil Cummins, Dept. 15, came to the rescue with his latest development—a collapsible tent.

In a matter of minutes, Cummins erected a "classroom" 40 feet long, 8 feet wide, and 8 feet tall.

Made of 12-pound canvas and folding steel bows and girders, the tent appears adaptable to virtually any flat terrain.

On cement or a similar hard surface, the tent is simply rolled out on casters. In case of a soft surface—such as in mud or sand—steel rails would be laid.

The structure has six nylon windows with storm flaps, and is equipped with guy-ropes for securing in case of high winds.

Pick-up trucks or other conventional vehicles can be used to transport the tent, although Cummins has devised his own trailer for that purpose. The horseshoe-shaped unit, is of course, roughly the same size as the steel beams—but only 11 inches deep!

A hydraulic pump on the trailer is used to position the tent for opening. And once casters are installed, the tent can actually be rolled out by one person.

Weight of the tent alone is 340 lbs., while tent and trailer tip the scales at 1,080 lbs.

Cummins thinks a quick-erection tent could be used to advantage in constructing such things as field hospitals, disaster housing, bivouac areas, and stand-by crew huts.

Equipment such as missiles, ground support items, pods, and industrial supplies could also be stored conveniently and quickly, Cummins said.

## GD/Astro Men Attend NASA Conference

Four General Dynamics/Astronautics executives will attend the Second Industry Program Plans Conference to be held Feb. 11 and 12 by National Aeronautics and Space Administration (NASA) in Washington, D. C.

Attending will be W. H. Patterson, vice president—advanced product planning; F. J. Dore, director, advanced systems; Palmer Osborn, manager, market research and analysis; and F. A. Zylius, manager, ballistic launch vehicles and manned space systems.

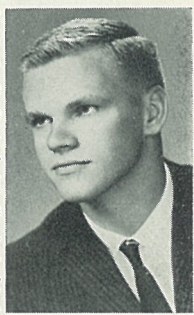
The conference is designed for personnel of NASA contractor firms who direct long-range planning, research and engineering, and who are concerned with aerospace programs and project proposal formulation.

### Behind Curtain

## GD/Pomona Son Czech Visitor

Life in communist Czechoslovakia was observed firsthand by Gaston "Gus" De Roos, a summer employee at GD/Pomona for the past four years.

Gus, a junior at the University of Redlands, is the son of L. T. De Roos, senior design engineer (Dept. 6) and Marguerite De Roos (Dept. 22). He is currently attending the University's European branch in Salzburg, Austria.



Gus De Roos

During a recent three-day trip to Prague on an educational tour organized by the University, Gus had his first look at communism in action at the Austro-Czech border where he saw electrified fences, watchtowers, guards armed with machine guns and vicious German Shepherd dogs. It looked like a giant concentration camp, Gus said in a letter to his parents.

With a guide from "Cedok," the state travel agency, the students stopped first in a little town near the border. There they were almost mobbed by the townspeople who see very few Americans. They were very friendly and wanted to know about America.

In Prague the group stayed at one of the finest hotels. A once beautiful city, Prague is now ugly, drab, barren and lifeless, according to De Roos. He says there were almost no cars, the shops were almost bare and what they do have to sell is "junk" by Western standards. The people walking in the streets do not smile and it is very quiet.

Most people seem well-dressed and no one was starving but there is a very severe meat shortage. One person to whom Gus talked said he got meat about once a month and that one egg sells for about 50 cents.

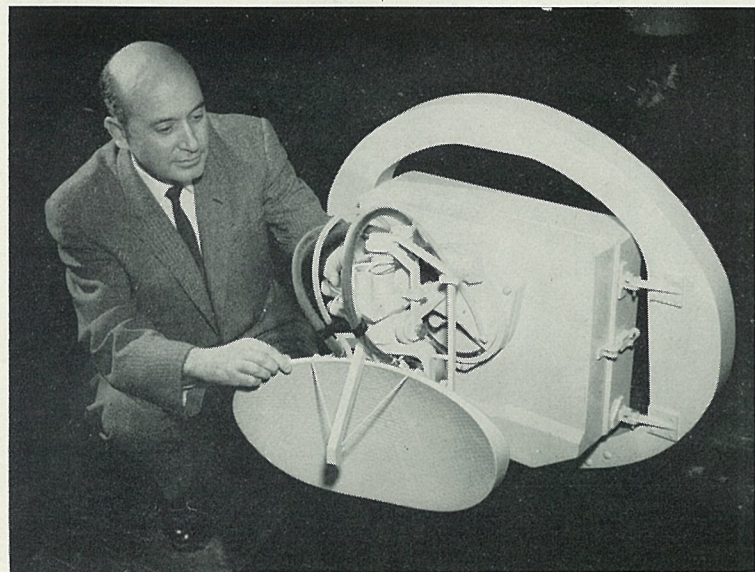
De Roos reported that everything in Czechoslovakia is state-owned, even the smallest shops. The most predominant type of store in the downtown business district was the "Sovietska Kniha," the Soviet bookstore. Three types of literature are available—technical, cultural and Soviet propaganda. The communist "bible," "The Communist Manifesto," by Karl Marx sells for one American penny while a book about the U.S.A. costs \$10.

Before going to Czechoslovakia, Gus thought that a majority of the people were "sold" on communism, but he found out that this was a misconception. In public people would not admit this but when talking to them alone they revealed their true feelings.

Most of the people he talked to were students about his own age and he had "boned up" on communistic doctrine before the trip so that he would be prepared to argue with them. But he said that the students wanted to know about America and wished they could come here. They thought communism was rotten and said they were very unhappy as were most of the people in the country.

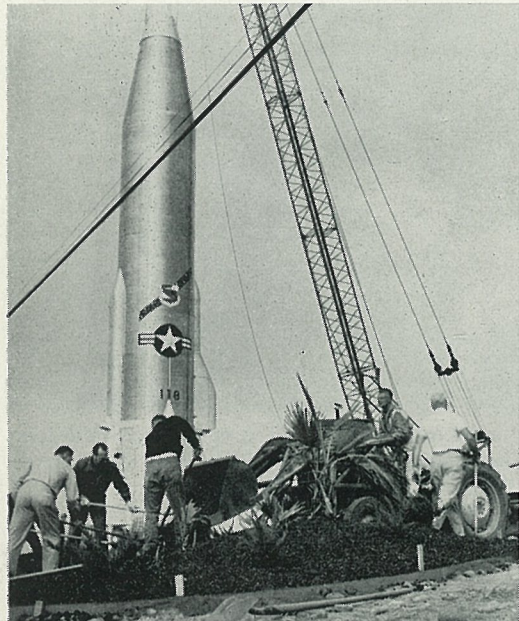
The only advocate of communism that De Roos met was a young Cuban student. He had fought in the Cuban militia when he was 16 and was a staunch supporter of Castro.

The highlight of his stay in Prague was a trip to the chief propaganda center. There he saw an anti-German and anti-American movie. (The Czech communists consider Germans and Americans the same people.) The film depicted everything bad in American life which the commies equated with the German atrocities in Czechoslovakia during World War II. The whole idea was to show what monsters Americans are and how similar we are to Germans.

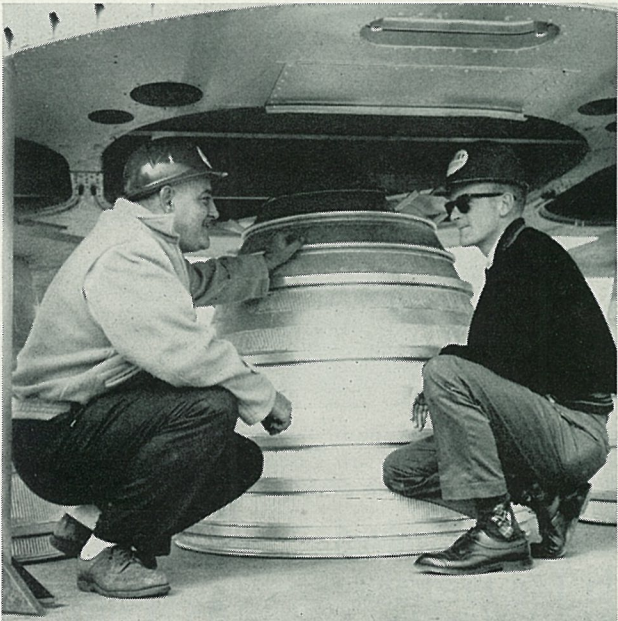


ADVANCED RADAR—Arthur R. Zagon, GD/Electronics—San Diego design specialist, indicates relative size of new compact radar system, developed by GD/E for use in any type plane.





**LANDMARK**—Erecting Atlas missile at recreation site was major event recently for GD/Astronautics. Two of key men in project were Marty Stutz, left, and Bill Shine. Busy landscapers continued their efforts even while cranes were lifting missile into place.



## \$52.7 Million Net Income Seen For 1962

Estimated net income of General Dynamics Corporation for the year ended Dec. 31, 1962, is approximately \$52,700,000, equivalent to \$5.27 per common share, Roger Lewis, president, announced this month.

Due to the tax credit resulting from the prior year's loss, no federal income tax has been charged against the corporation's income, although provision has been made for taxes on earnings of subsidiaries.

Consolidated net sales for the year ended Dec. 31, 1962, amount to approximately \$1,896,000,000.

Bank loans outstanding at the end of 1962 stood at \$89,000,000, compared with \$155,000,000 at the end of 1961, and with a peak of \$187,000,000 in February 1962.

Working capital increased from \$49,700,000 at the end of 1961 to more than \$118,000,000 at the end of 1962.

According to official government figures, General Dynamics in 1962 ranked first among military prime contractors in new Department of Defense awards for research and development.

These preliminary figures are subject to audit. Final figures will be announced next month when the annual report to shareholders is distributed.

## Friday Is Deadline For Club Scholars

Friday (Feb. 22) is deadline for entering annual General Dynamics/Astronautics Management Club scholarship program for 1963.

Applications must be in the hands of the scholarship committee by that time. Keith Blair, chairman, is located in the library and information services office, Bldg. 4, at the main plant for parents who wish to hand carry applications. His extension is 1073.

Sons or daughters of Astro employees will receive an \$800, a \$400 and two \$100 awards.

## AF Accepts First GLOTRAC Responder

Major GLOTRAC milestone was passed last week with Air Force acceptance of the first GD/Astronautics-built transponder for the space vehicle tracking system described in full on page 3.

Key figure in "sell-off" operations was Dick Fixsen, senior design engineer and GLOTRAC principal engineer. He reports to B. G. Anderson, GD/Astro group engineer.

## Astronauts Express Thanks to GD/Astro

Appreciation for hospitality extended during visits to General Dynamics/Astronautics has been expressed in letters from Astronauts John Glenn and Scott Carpenter.

Wes Magnuson, Management Club president, said they repeated their statement that they definitely were "satisfied Atlas customers." Among those singled out for thanks were N. E. Lara, Bill Stubbs, Charles Adams, Norman Currier, who squired the Astronauts at San Diego.

## Astro Offers Bargain Belts

General Dynamics/Astronautics folk who have not already done so, are being encouraged to equip their cars with seat belts.

Those wishing to increase free-way safety margin can purchase top-quality belts at discount price from GD/Astro's safety crib in Bldg. 5, at the main plant.

A new shipment of 6,000-pound test nylon web belts is now available for employee purchase at the "rock-bottom" price of \$2.88 (plus tax) per belt.

The belts, approved by the American Seat Belt Council, are available in flame (red), white, black, brown, gray, powder blue, and green. Only a wrench is needed to install them on 1962-model and newer cars. Older makes will require use of a drill to mount them.

## Help Sought to Recruit Engineers, Scientists

General Dynamics/Astronautics is currently in the midst of an effort to locate and hire more than 1,500 highly qualified engineers and scientists.

It will continue throughout 1963 and YOU may be in a position to lend an important hand to this task through a simple introduction.

"Many of our finest engineers and scientists were introduced to Astronautics through a friend already working with us," said M. V. Wisdom, director of industrial relations. "Perhaps others know of men or women qualified to fill our requirements who may be interested in joining Astronautics."

The handy recommendation form accompanying this article may be used to suggest a potential engineer or scientist. Astro folk are invited to fill it in, then turn it over to their immediate supervisor for transmittal to R.

M. Smith, chief of professional placement and personnel, mail zone 130-90 at the main plant, who will contact the individual.

Of particular interest to Astronautics at this time are men and women qualified in: dynamics engineering, including stability and control as well as structural dynamics; aero-thermodynamics engineering; advanced electronic systems; advanced systems weights engineering; mechanical design; electrical engineering; operations and systems analysis; stress analysis; guidance and trajectory analysis for space boosters, weapons systems guidance analysis and guidance systems research.

Naturally, other skills are sought and you are urged to recommend potential employees who have basic qualifications for engineering and scientific assignments.

### I Would Like to Recommend ..

Complete this form and give it to your supervisor. He will forward it to R. M. Smith, Dept. 130-90, Plant 71 (San Diego). Recommended by

Dept. Ext.

If we contact this individual, may we use your name as the person who recommended him? yes no

Name Tel.

Address (city) (state)

His experience is in the field of

## ARA Council to Install New Officers in April

Nominees for four offices in Astronautics Recreation Association and ARA's "Man of the Year" were presented last week to ARA's Employees' Council.

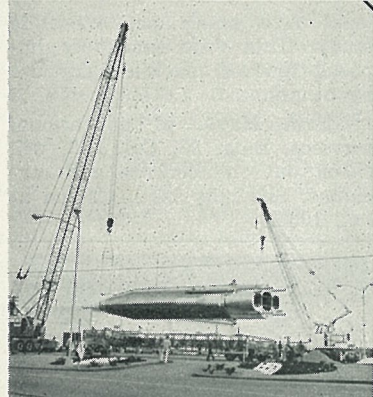
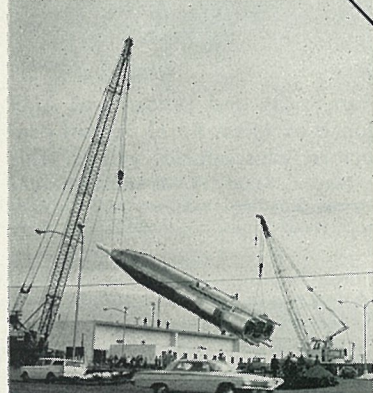
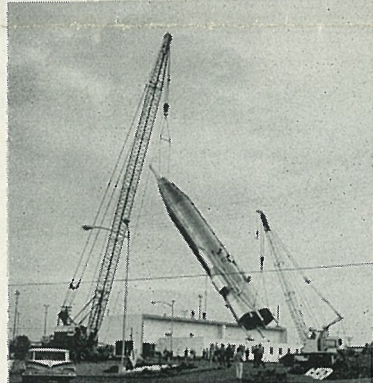
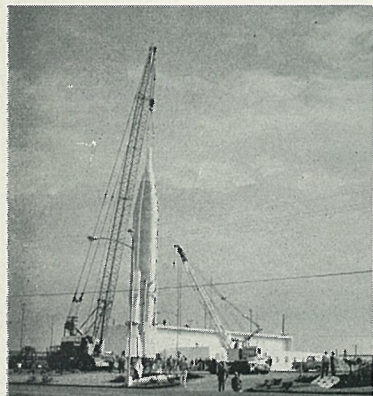
Further nominations will be accepted at the March Council meeting prior to and during voting. New officers will take over in April, while winner of the annual award will remain secret until an appropriate time.

Candidates for the annual award, symbolic of special services rendered in the field of recreation at Astro, are C. M. "Chuck" Ogle of Dept. 290-10 and Benoit "Ben" Lachance of Dept. 547-30. Ogle was primarily responsible for ARA's winning entry in the Mother Goose Parade, while Lachance formed

a highly-successful Hi-Fi/Music group that has built an outstanding workshop and music center in ARA Clubhouse.

Named candidates for ARA president were Ezra Johnson (Dept. 401-4) and Ben Cendali (Dept. 578-0). Johnson is a charter member of the Council and is Gun Club commissioner. He has been a key leader in development of ARA's Clubhouse and Recreation Area. Johnson is currently ARA vice president. Cendali is tennis commissioner and has been a Council member since 1961. He now serves as budget committee chairman.

Vice presidential candidates are Bud Davies (Dept. 964-3) and Marty Stutz (Dept. 452-0). Davies (Continued on Page 5)

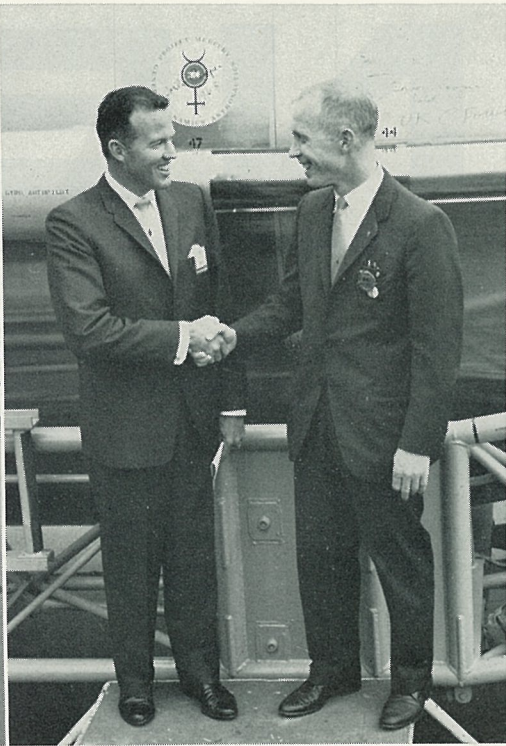


**ON UP AND UP**—Sequence photos show how cranes expertly lifted missile into place on foundation. Former test Atlas that had out-lived its usefulness, missile was made available by Air Force. Many hours of volunteer, weekend work went into stripping and preparation for life as display. Management Club members spent 2,500 manhours in refurbishing missile.



**SAFETY FIRST**—Seat belts are intended for cars, but Barbara Campbell, GD/Astro Centaur systems management, takes no chances with "fiery steed" in Recreation Area. Belts come in choice of seven colors, offer beauty plus security.





CLOSE LOOK—Astronaut Gordon Cooper visited GD/Astronautics recently to inspect Atlas that will power his Mercury capsule. In center he chats with Astro's Cal Fowler who will direct countdown. In photo at right he peers closely at electronic

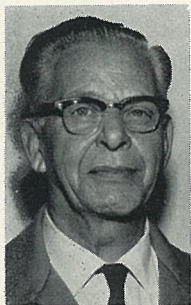
component as Frank Kemper, Dick Keehn and Ed Russell give him guided tour. At left Cooper signs autograph for Bernadine Hausman. With him is C. S. Ames, vice president and program director-SLV.

## Log Book Entries

### Service Emblems

#### MAIN PLANT

Service emblems due during the period Feb. 16 through Feb. 28.  
Thirty-year: Dept. 531-2, R. K. Whitney.  
Twenty-five-year: Dept. 835-3, D. O. Wyman.



Among those receiving 25-year emblems at GD/Astro recently was Charles R. Ryan, Dept. 718-0.



Harold F. Hampy, GD/Astro Dept. 573-0, recently received his 25-year emblem from President J. R. Dempsey.

Twenty-year: Dept. 120-0, E. C. Keefe; Dept. 322-8, G. R. Moore.

Fifteen-year: Dept. 147-0, W. L. Colahan; Dept. 403-1, G. P. Alexander; Dept. 451-0, Benjamin Weber; Dept. 480-0, G. W. Lynch; Dept. 716-0, Edith M. Williams; Dept. 781-0, Hertha K. Eggers; Dept. 971-5, M. E. Dahl.

Ten-year: Dept. 110-0, C. C. Martin; Dept. 143-3, Violet L. Thomas; Dept. 144-3, W. M. Booher; Dept. 193-3, Ann S. Donnelly; Dept. 322, G. R. Fair Jr.; D. E. Ritchey; Dept. 335-2, H. W. Weaver; Dept. 337-7, Joanne M. Edwards.

Dept. 360-2, A. M. Dale; Dept. 527-4, R. J. Lang; Dept. 531-2, F. F. Marmon; Dept. 545-2, G. B. Hale; Dept. 571-0, B. J. Poole; Dept. 573-1, E. R. Wagner; Dept. 580-7, B. D. Newbery; Dept. 681-3, O. J. Meotti Jr.; Dept. 756-0, H. L. Redmon; H. W. Yates; Dept. 758-0, G. V. Faz; Dept. 834-1, B. M. Malone.

#### SCHILLING AFB

Fifteen-year: Dept. 615-0, V. W. Higginbotham.

#### WALKER AFB

Ten-year: Dept. 619-7, C. A. Goeb Jr.

### Births

#### MAIN PLANT

GILBERT—Son, Christopher Francis, 8 lbs., 2 oz., born Feb. 11 to Mr. and Mrs. Wilburn D. Gilbert, Dept. 130-1.

### Retirements

#### MAIN PLANT

CURLEY—John J. Jr., Dept. 131-4. Retired Jan. 25. Seniority date, Sept. 18, 1952.

SCHULER—Edmund W., Dept. 193-3. Retired Jan. 31. Seniority date, Dec. 21, 1950.

WOLFORD—George D., Dept. 223-3. Retired Jan. 31. Seniority date Feb. 22, 1956.

### Personals

#### MAIN PLANT

Our thanks to all at GD/Astro for your kindness upon the death of my husband, Henry B. Jewell. At a time such as this, we learn how much our friends mean to us.

Mrs. Madeline Jewell and children.

\* \* \*

Your kind expression of sympathy upon the death of William H. Simms is gratefully acknowledged and deeply appreciated.

Mrs. Mary Simms, Bill Jr., John and David.

\* \* \*

Our sincere appreciation for the many kindnesses shown us by friends at GD/Convair and GD/Astro upon the death of my husband, William Strukelj.

Mrs. William Strukelj and family.

#### VANDENBERG AFB

Our family gratefully acknowledges your kind sympathy at the death of my mother, Mrs. Irma Scolari.

Mrs. Rosabel Scolari Cameron, Dept. 576-6.

### Deaths

#### MAIN PLANT

RASMUSSEN—Vern C., Dept. 783-0. Died Jan. 29. Survived by mother, Mrs. Nelly Davis.

SIMMS—William H., Dept. 193-3. Died Feb. 3.

#### VANDENBERG AFB

BAIRD—Manley F. Jr., Dept. 576-3. Died Feb. 5. Survived by wife, Lena May.

### Reliability Director Speaks in Los Angeles

Phil I. Harr, General Dynamics/Astronautics director of reliability control, will address West Coast Reliability Symposium sponsored by Los Angeles section, American Society for Quality Control, today (Feb. 20) in Los Angeles.

Harr will discuss "Reliability program planning for space launch vehicles," emphasizing the need for continually higher product reliability.

### GD/Astro Involved In Two Programs Assigned Goddard

CAPE CANAVERAL — Goddard Space Flight Center's Field Project Branch here has been assigned launch responsibility for two NASA space vehicle programs involving General Dynamics/Astronautics.

These are programs for the GD/Astro-built Centaur, and for Agena with which Atlas is frequently used as launch vehicle.

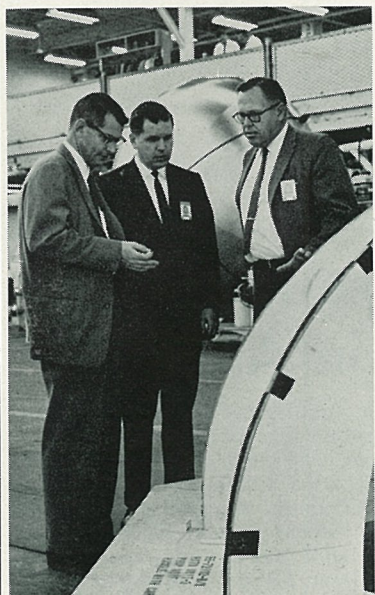
Launches will be conducted under technical direction of Agena-Centaur project managers at NASA's Lewis Research Center, which holds overall project responsibility for both Agena and Centaur.

Under B. G. MacNabb, director of AMR operations, GD/Astro personnel involved include Roger Lunch, manager of Centaur launch operations; Dan Sorokon, Centaur test conductor; T. J. O'Malley, space launch operations manager; Orion Reed and Cal Fowler, site managers; and H. C. O'Dell, acting site manager.

NASA's Goddard Field Projects Branch is headed by Robert Gray, while Dr. Homer E. Newell directs the NASA Office of Space Sciences with overall program management of Centaur and Agena projects.

### NAVY TEST PILOTS WILL TOUR FACTORY

A graduating class of the U. S. Naval Test Pilot School at Naval Air Test Center will tour GD/Fort Worth tomorrow. Mal Holloway of the president's office will conduct the tour.



NASA MANAGER — David S. Gabriel, left, recently visited Astro after being named Centaur project manager for NASA's Lewis Research Center. He is shown with Grant L. Hansen, vice president and program director-Centaur, center, and L. G. Granstedt, manufacturing operations manager. Gabriel visited fabrication and test facilities and discussed program objectives.

### Atlas Test Conductors Guests As 150th Firing Celebrated

CAPE CANAVERAL — Atlas test conductors, past and present, gathered here recently for ceremonies marking launch of the 150th Atlas since the program began.

Karel Bossart, General Dynamics/Astronautics technical director, presented each with special pins marking the occasion. In addition, Bossart presented silver pins to newsmen in the area for their contributions to keeping the public informed on Atlas events.

In a turnabout, B. G. MacNabb, GD/Astro's director of AMR op-

erations, named Bossart an honorary test conductor. Henri Landwirth, manager of the Cape Colony Inn, was also made an honorary test conductor for his help in housing and serving newsmen and program participants.

Test conductors present and honored include the Air Force's Capt. P. L. Boreland as well as the following Astro men: John Hughes, Roger Lynch, Travis Maloy, L. P. Cole, J. C. Moline, O. H. Reed, Cal Fowler, Ernest Baldini, Tom O'Malley and H. L. Williams.



IMPRESSIVE—Atlas test conductors, past and present, at AMR were honored recently on 150th launch of Atlas. Karel Bossart presented special pins to test conductors, plus special guests. This group includes, kneeling left to right, John Hughes, Bossart, B. G. MacNabb, AMR operations manager, Roger Lynch, Travis Maloy. Standing same order, Capt. R. L. Boreland, L. P. Cole, J. C. Moline, O. H. Reed, Henri Landwirth, C. D. Fowler, E. A. Baldini, T. J. O'Malley and W. L. Williams.

### Three Self-Study Courses Offered on 'Library' Basis

Three self-study programmed instruction courses are available for loan to General Dynamics/Astronautics employees from educational services (Dept. 130-3).

The courses are designed for home study on student's own time, with lessons in programmed form and presented by means of a plastic "teaching machine."

"Introductory Statistics" is a college level course which covers descriptive statistics and statistical inference. This course should be completed in 20 to 25 hours.

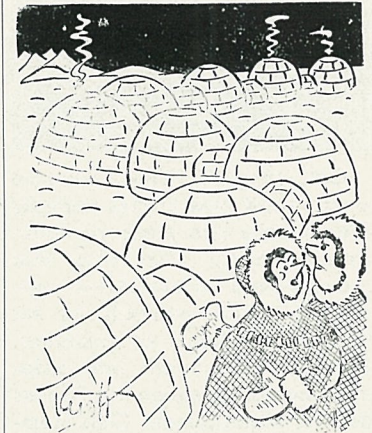
Definitions and formulations of basic electrical concepts are taught in "Fundamentals of Electricity," a high school-level course which takes about 18 hours to complete.

"Steno-speed" is designed to teach an easy-to-learn shorthand course. A dictation speed of 80 words per minute can be attained in 45 to 55 hours' study.

Courses and teaching machines will be loaned to GD/Astro employees on a "library" basis, with students expected to devote at

least five hours per week to study. This requirement is imposed to free machines for use by others.

Gloria Hays, of educational services, Bldg. 33, Col. E-5, will check out the courses and machines. She may be contacted at ext. 1935.



"His family just keeps growing and growing."

## General Dynamics NEWS

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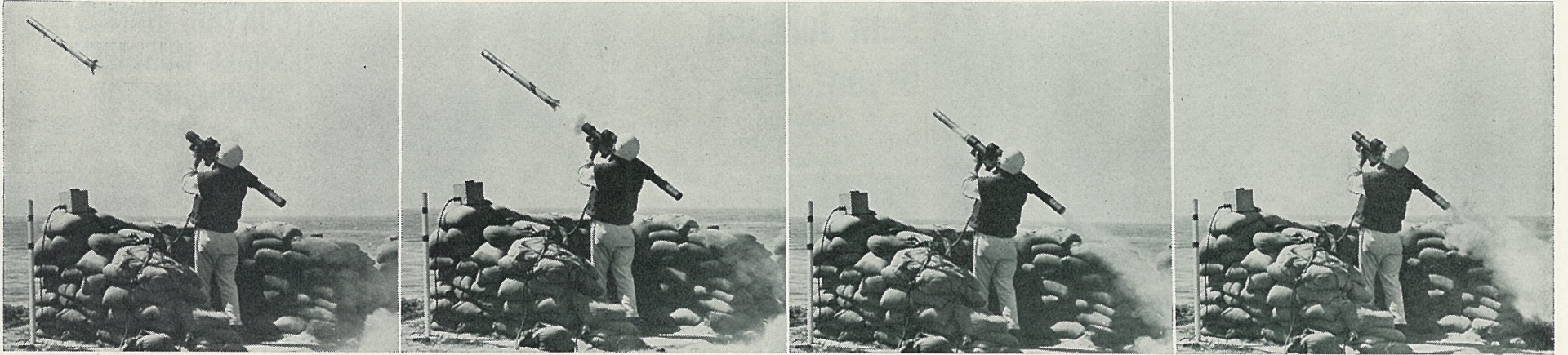
GD/Electronics (San Diego) news contact: Betty Freeby, 298-4641, ext. 1377, Plant 1, Bldg. 51.

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**SHOULDER LAUNCH**—Redeye, missile weapon system designed to give combat troops capability of destroying low strafing or bombing aircraft, is shown during

recent test firing. General Dynamics/Pomona was awarded \$1,600,000 contract Feb. 4 by U. S. Army for continued development of infrared, surface-to-air missile.

## Contract Continues Development Of Army's Shoulder-Fired Redeye

General Dynamics/Pomona has been awarded a \$1,600,000 letter-contract for continued development of Redeye missile system, the U. S. Army announced Feb. 4.

Redeye is an infrared, surface-to-air missile that will be shoulder-fired. It is a composite structure containing propellant, an electronic guidance system and a high-explosive warhead.

The missile launcher, which outwardly resembles the bazooka of World War II, is about four feet long, three inches in di-

ameter and weighs about 20 pounds. Both missile and launcher can be carried by one man through underbrush and rugged terrain where no other types of anti-aircraft weapon could be transported. The launcher tube also serves as a shipping container.

The Army Missile Command, Redstone Arsenal, Ala., an element of the Army Material Command, has overall responsibility for Redeye. Lt. Col. H. L. Claterbus is Redeye project officer.

## GLOTRAC Space Tracker Promises High Mobility, Increased Accuracy

GLOTRAC, globe-spanning space vehicle tracking network built by General Dynamics/Astronautics, passed a production milestone recently with commencement of systems testing on the first tracking equipment trailer.

This first trailer is scheduled for shipment to San Salvador, B.W.I.

GLOTRAC was designed and developed by GD/Astro for Air Force Missile Test Center, Cape Canaveral, as a natural outgrowth of the company's highly successful AZUSA system, versions of which have been operational since 1953. GLOTRAC will provide even more precise tracking and offer increased mobility as well.

Work at GD/Astro is under direction of S. L. Ackerman, vice president and program director, electronic programs.

Equipment housed in the trailers includes GLOTRAC's unique continuous wave (CW) measurement system, which utilizes both the Doppler principle and the phenomenon of electromagnetic phase delay.

"Basically," explained T. H. Scholder, GD/Astro GLOTRAC project manager, "Doppler is an effect of relative velocity on frequency, usually illustrated by the way in which the whistle of an approaching train rises in pitch (its frequency rises); then becomes lower as the train passes and moves away."

GLOTRAC applies these principles electronically in measuring position, rate and direction of movement of space vehicles. By combining information from a number of precisely located stations, computers derive extremely accurate trajectory data.

The 40-foot vans housing this equipment can be transported by air (in planes such as the C-124 or C-133) to provide GLOTRAC with great flexibility to meet changing mission requirements.

Within each trailer, equipment is mounted in standard 19-inch racks on horizontal chassis with tilting drawer-slide arrangements. Trailers are air conditioned, humidity controlled, and include an operator's position and standard teletype and communication equipment.

Skill in electronic miniaturization, which, in the course of AZUSA development trimmed weight of the airborne transponder from 100 to 20 pounds, is again demonstrated with GLOTRAC.

The airborne transponder for GLOTRAC occupies only 140 cubic inches; weighs only 5¼ pounds, and operates on some 38-watts power.

For maximum reliability, GD/Astro uses high-density "welded module" construction in the transponder, while modular construction provides for easy field maintenance.

Initial GLOTRAC installation will consist of one "segment" comprised of several "stations." This segment includes a digital computer from which information is fed to a central data processing facility at Cape Canaveral.

The segment centers at the Cape, where the GD/Astro-built AZUSA Mark II is called into play, and includes several down-range stations.

For space tracking of the fu-

ture, GLOTRAC designers have provided the system with a built-in "growth potential." Ultimately it can become a single integrated CW system, no longer requiring added pulse radars and airborne pulse beacons. Accuracy of track can be improved, communication can be refined, and the ability for space communication, telemetry and command functions through the GLOTRAC transponder can be added.

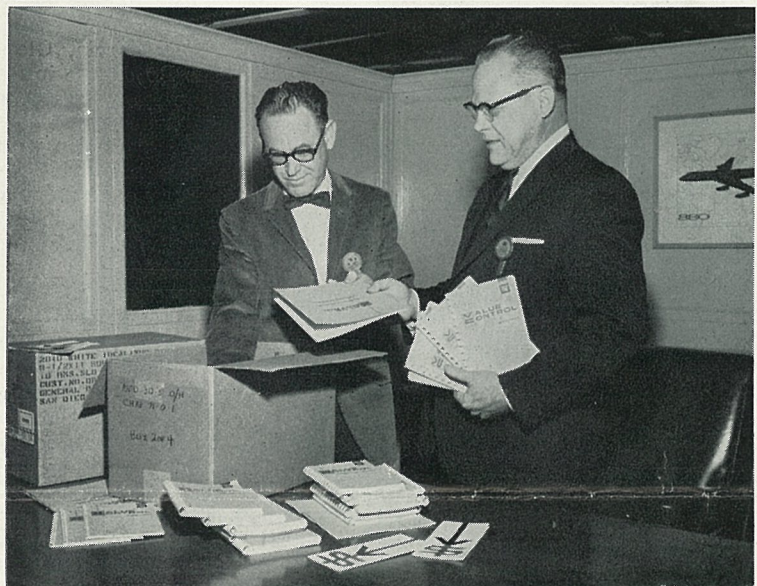
Col. R. S. Maloney Jr., deputy commander for range development; Col. George T. Galt, range program director; and Lt. Col. W. K. Hoey, chief, GLOTRAC project office, are key personnel at AFMTC directing this program.

At GD/Astro, L. F. Bell is assistant GLOTRAC project man-

ager; D. C. Prim, manager of trajectory measurement and control; J. F. Langston, manager of field operations; and C. A. Paul, manager of manufacturing operations.

Group engineers include H. L. Copeland, ground tracking design; G. T. Herring, tracking equipment; B. G. Anderson, vehicle tracking design; L. N. Lawhead, tracking systems parameters; and R. J. Jacobs, system improvement.

Contributing to GLOTRAC development were Jim Crooks, Bob Weaver and Mal Cox, long associated with AZUSA programs, while Bob Leger and Bob Bowers assisted in conceptual studies and are active in GLOTRAC trajectory analysis.



**OFF THE PRESS**—Howard R. Kennedy, GD/Convair chief of publications, and H. P. Williams, manager of value control, unpack first shipment of value control programmed instruction TechBooks, now ready for distribution.

## Complete Value Control Course Made Available to Divisions

Final revised edition of value control programmed instruction, compiled at General Dynamics/Convair, now is available in published form for other GD divisions and industries throughout the country.

Descriptive brochures, listing in detail advantages of the newly-developed method of teaching value engineering, are going to all aerospace and other manufacturing companies, large and small, throughout the country.

First on the list to receive the advertising material will be members of the Society of American Value Engineers and Electronic Industries Association who have expressed definite interest in GD/Convair's forward strides in value analysis training, said H. P. Williams, value control manager.

In fact, Williams is already busy answering the near 50 requests from companies and government agencies interested in setting up their own programs along lines similar to those used at GD/Convair.

"Value control is becoming a must for companies bidding for defense contracts," stressed Williams. "The new Armed Services Procurement Regulation makes it mandatory that all companies receiving contracts of \$100,000 or over have active value engineer-

ing programs in operation.

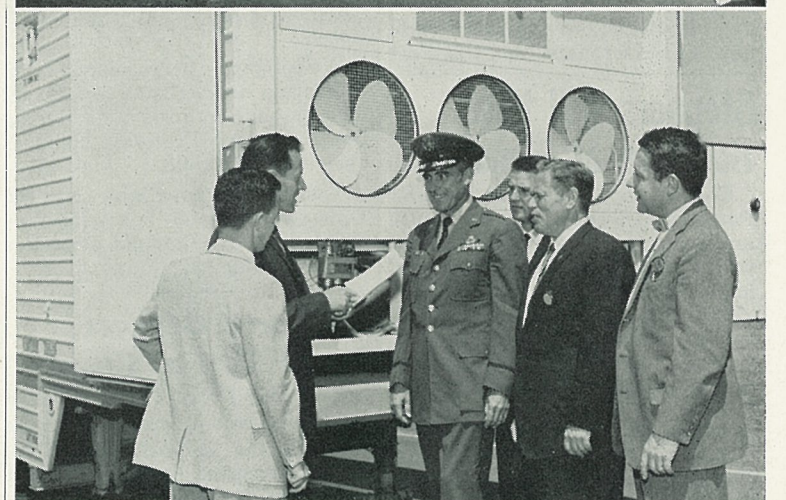
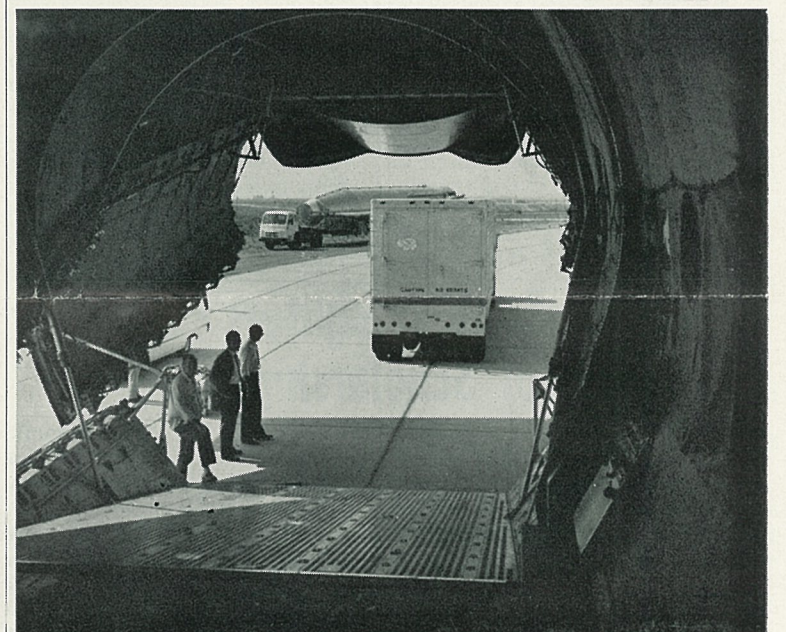
"And from our own in-plant experience, we can prove that GD/Convair's step-by-step programmed instruction course reduces learning time by at least 25 per cent, requires less direction and guidance, gives the student a better understanding of what to do at each phase.

"With this carefully prepared and tested material, seminars can be conducted in a much more professional atmosphere and run continuously."

Publication of the complete set of five books and instructor's manual culminates almost a year of intensive research, compilation, and testing through cooperative efforts of GD/Convair technical publications, educational services, and value control functions.

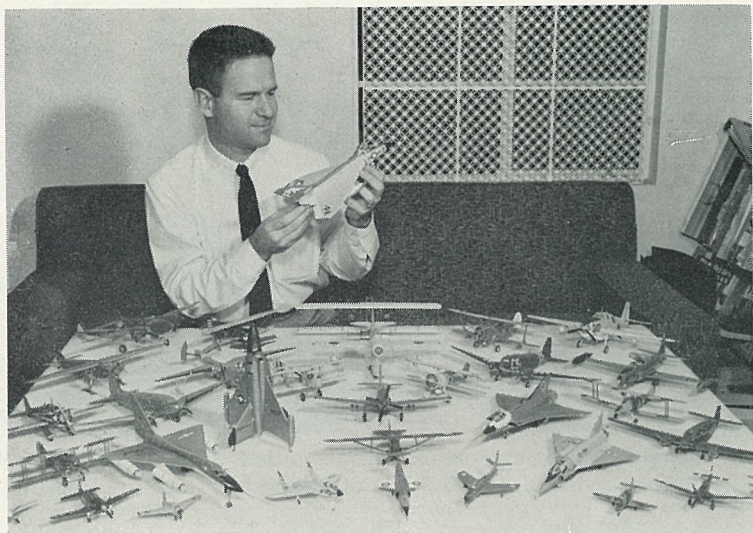


For information on GD/Convair's Value Control Course write H. P. Williams, Manager Value Control, General Dynamics/Convair, P.O. Box 1950, San Diego 12, Calif.



**ON WHEELS**—First units of new GLOTRAC satellite tracking system developed by GD/Astronautics will go to British West Indies soon. In top photo, GLOTRAC van is test loaded aboard C-133. Center: three tracking stations are shown in test area at GD/Astro. Below, key personnel in project, Bob Alexander, Tom Scholder, Lt. Col. W. K. Hoey, Steve Roach (AFMTC Tech Rep), GD/Astro Vice President Sam Ackerman, L. Ferris Bell.





**MODELER**—J. Ned Shaw, GD/Astro Dept. 568-1, holds prize-winning Skyray model, carved from basswood, one of scale model fighting craft in his collection, which—some day—will include one from every country in world.

### Big Project

## Model Plane Maker Planning Midget For Every Country

A lunch-time hobby is well on its way to becoming a lifetime project for J. Ned Shaw, GD/Astro dynamics lab test engineer at Plant 1.

Shaw, who spends his lunch periods working on his meticulously faithful scale models of military craft, plans to duplicate, in miniature, at least one plane from every country in the world before he's through.

So far, his model collection, begun in 1956, contains 11 which will eventually become a part of his ambitious project. They are fighting planes of Germany, Japan, Hungary, Spain, Uruguay, Paraguay, China, Canada, Holland, Sweden, South Korea.

He is currently working on an F4U fighter of the Argentine Navy and will start next on a 1938 French plane incorporated into the Estonia air force.

"I try to duplicate exactly a specific plane, not merely a type," explained Shaw. And he searches aviation magazines and books and scans old movies for markings to correctly identify his foreign planes.

Shaw's present collection totals 35, ranging from the Wright brothers' Kitty Hawk to a B-58 Hustler. Tiniest are a Fokker World War I tri-plane and Japanese World War II rocket plane, measuring about three inches from tip to tail. Largest is the F4D Skyray, carved entirely from basswood, which won him an elaborate trophy in a 1959 modeling contest.

The collection is in demand for community displays—seen at Del Mar during several county fairs and often at the Naval Training Center.

## Dynamics Sons, Daughters Reminded of Scholarships

Sons and daughters of General Dynamics families in the San Diego area who intend to qualify for National Merit Scholarships must contact their student scholarship counselors immediately.

Qualification examinations will be held in San Diego high schools on Saturday, March 9. Applications must be made well before that date.

Second-semester juniors and first-semester seniors who plan to enter college in 1964 are eligible to take the tests, first step toward scholarships awarded in the spring of 1964.

Top-scoring students in the exams this March will be semi-finalists. These will compete in second examinations late this year to decide winners.

General Dynamics provides 12 scholarships, apportioned among its divisions, under the National Merit Scholarship program. Last year, 11 GD sons and daughters from six divisions received awards. GD/Convair, GD/Pomona, GD/Astronautics, GD/Fort

Worth each had two winners; GD/Electronics at San Diego, one; and GD/Electric Boat, Groton, Conn., two.

Scholarships range from \$1,000 to \$6,000, divided over four years of college work. Amount of the award is based on the amount which the family and student can provide, and cost of college fees. Scholarships may be used toward collegiate study in any field.

### GD/Convair's Gerde On Puppet Program

Duane Gerde of GD/Convair Dept. 400 will be on the program of the coming Pacific Puppet Festival, being held in San Diego for the first time this weekend, Feb. 22-24.

Gerde, an expert in puppetry, will give a demonstration on marionette articulation during the workshop program set from 1-5 p.m., Feb. 22, at U.S. Grant Hotel.

Well-known performers from California and Arizona are scheduled to put on programs during the three-day Festival which is open to the public.

Tickets are available at the U.S. Grant Hotel box office as well as at GD/Convair employee services, Bldg. 32, Plant 1.

### Air Force Officers Spend Day at Convair

Four Air Force officers, based at GD/Astronautics during the year in the Education-With-Industry program, spent a day last week at GD/Convair.

Lt. Col. Vince Black, Maj. Walt Wenberg, Capt. Ted Goode, Capt. Dale Picardat spent Tuesday touring the C-141, SATS mats, and Little Joe II production areas.

GD/Convair educational services coordinated the visit.

## Sam Johnson Bryant Aide

S. Y. Johnson, veteran General Dynamics executive, has been named assistant to E. D. Bryant, vice president—operations, at General Dynamics/Astronautics.



S. Y. Johnson

His basic responsibility will lie in the area of advance facilities planning.

A native of Idaho, Johnson was educated in California, receiving bachelor and master's degrees in civil and structural engineering from California Institute of Technology.

He also holds a master's degree from Harvard Graduate School of Business Administration, where he served for a time as instructor.

During World War II, Johnson served in the U. S. Navy, attaining the rank of lieutenant commander.

Johnson joined Convair's Vulture Field Division in 1946 as staff assistant, and was later division budget administrator.

From 1946 until 1961 he held posts in budget administration with Convair and former Convair General Office, and served both as executive assistant to the president, and director of facilities planning.

## Dynamics Joins Engineer Week

General Dynamics Corporation engineers throughout the San Diego area will join with others across the nation in the coming week to observe National Engineers' Week activities.

Many Dynamics men and women will share the job of conducting this event, as they have in planning it.

Key San Diego parts of the program include: a 7 p.m. Feb. 22 dinner at the OceanHouse; a careers conference for high school students at the Conference Bldg., Balboa Park at 10 a.m., Feb. 23; and free engineering exhibitions at the Electric Bldg., Balboa Park, Feb. 22 and Feb. 23 from 10 a.m. to 9 p.m. and from 1 p.m. to 9 p.m. on Feb. 24.

EDWARDS RS—Atlas/Centaur static test facilities here operated by GD/Astronautics were included in sights visited during National Engineers' Week.

The Air Force Flight Test Center, of which this installation is a part, held open house for engineers, Feb. 19, and visitors toured facilities.

### General to Speak For Ordnance Unit

San Diego Post, American Ordnance Association, will hold its annual winter banquet March 1 in the Crystal Room, U. S. Grant Hotel.

Guest speaker is Maj. Gen. J. F. Thorlin, USA, commanding general, White Sands Proving Ground. He will discuss the White Sands Missile Range.

A social hour will begin at 7 p.m., with dinner at 8 p.m. Members and guests have been invited to attend.

G. K. Heath of GD/Astro is president of the local post, and C. A. Paul is vice president. Directors include M. Rosenbaum and T. B. Field. Ray Jones is membership chairman.

Gen. Thorlin's appearance was arranged by K. J. Bossart, a past president of the San Diego Post, ex-officio director, and national representative.

### Astro, Convair Post Salvage Schedule

Salvage yard schedule at GD/Convair and GD/Astro for the next four Saturdays is:

GD/Astro—Feb. 23, March 9.  
GD/Convair—March 2, 16.



**DAMP TRIP**—Rain greeted ARA-CRA ice skaters on recent Big Bear weekend. In top photo Bob Dunn of GD/Convair and Barbara Gilliland of Astro group pensively watch downpour. Kids had fun indoors, however, and so did elders as Bud Davies dished up chow. Snow appeared next day.

## Color of Badge Tab Explained

Clarification of special red plastic tabs being affixed to some new badges being distributed at General Dynamics/Astronautics was issued this week by W. E. Bowman, manager of industrial security.

A red plastic tab indicates the wearer is a non-employee of General Dynamics, that is, he or she works for NASA, the Air Force or an associate contractor at Astronautics.

Tabs issued for Astro employees are blue for all salaried personnel including supervision and either green, yellow or white for hourly employees, depending upon shift. These tabs are located on the lower right hand corner of the badge.

Colored circles on the lower left hand corner designate security clearances.

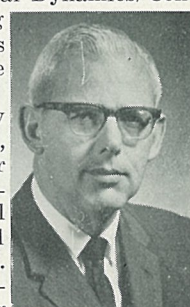
### REBECCA SPARLING WILL BE SPEAKER

General Dynamics/Pomona's Rebecca Sparling, design specialist, will present a paper entitled "Metallurgy in the Space Age" at a meeting of San Gabriel Valley Chapter, SAMPE, Feb. 25.

## CONVAIR NAMES SMALL BUSINESS ADMINISTRATOR

Warren E. Gleason has been named Small Business Administrator at General Dynamics/Convair, replacing V. M. Burns who has left the company.

In his new post Gleason, former vendor claims negotiator in material department, will report to W. H. Parry, general purchasing agent.



Warren Gleason

According to Parry, the Small Business Administrator has complete responsibility for GD/Convair's vendor relation activities and is in charge of all Small Business Administration program and status reporting. He also is responsible for survey and evaluation of present and potential sources of supply.

Gleason will represent GD/Convair in support of San Diego Chamber of Commerce's current "Try San Diego First" campaign.

He joined the division in 1950 and has been in material and purchasing functions ever since as senior buyer, buying supervisor, and vendor claims negotiator since 1957.

A native of California, Gleason received his BS degree in industrial management from the University of Arkansas and continued his formal education with graduate study in industrial engineering at Purdue University where he also instructed in accounting and mathematics.

## LERMER AUTHORS HANDBOOK CHAPTER

A section of a forthcoming reference book, published under auspices of the American Society of Tool and Manufacturing Engineers, is authored by a General Dynamics/Convair engineer.

August S. Lerner of Dept. 6-2 contributed the chapter on graphical computing methods for the Manufacturing Planning and Estimating Handbook, which will be off the press in mid-March. He compiled his manuscript at the request of the Society more than two years ago when plans for such a handbook were first initiated.

Lerner, who joined GD/Convair in 1956 as a senior dynamics engineer, has had several other articles published in recent years. "A Graphical Analog Computer," appeared in the February, 1959, issue of Electrical Manufacturing, and his article, "How Temperature Affects Hydraulic Servo Performance," won \$100 in the 1959 Hydraulics and Pneumatics prize paper contest and was published in the June, 1960, issue. The same magazine accepted a second, "We Need Simpler Design Methods," for its December, 1960, issue.

A paper, "A Temperature-Response Diagram," by Lerner was presented at the 1961 Society of Automotive Engineers National Aeronautic Meeting in New York.

## Toastmasters' Club Sets Weekly Meeting

Dynamic Toastmasters' Club No. 457 will meet in regular session tomorrow evening (Feb. 21) at a coffee and dessert meeting in Convair executive dining room at 6 p.m.

All members and interested GD men in the San Diego area are urged to attend the speaking group's weekly session. Five new members, Ralph McIntire, Ernest Kling, Alexander Stebbins, Gilbert Siegmund, and Henry Poniktera, were inducted into the club last month.

Selection of new officers for the coming club year will be decided at the March 7 meeting.

Anyone interested in joining is urged to call Bob Byron at ext. 4345, Astro main site, or Larry Sweeney, ext. 1687, Convair Plant 1.

## Steppers Will Host Hoedown at Pomona

Convairity Steppers at GD/Pomona will celebrate their 10th anniversary by acting as hosts to the annual all-General Dynamics Hoedown March 2.

Steppers and members of the square dance groups at GD/Convair and GD/Astro will dine together at 6:30 p.m. in Palomares Community Center, Orange Grove and Cucamonga Ave., Pomona.

Dancing will begin at 8 p.m. Guest callers and live music will be featured and "Smitty" Smith will act as master of ceremonies. Commissioner Lloyd Scarborough said that Pomona dancers are invited to attend the dance but must make a donation of \$2 per couple. Steppers and members of the two San Diego clubs will be admitted free.



# Sports & Recreation



**RUGGED RUGBY**—ARA athletes opened regular season play in Southern California Rugby Union earlier this month, facing teams from both Los Angeles and San Diego areas. Rugby, parent-game of football, provides plenty of action with 15 men per team; no time outs; and ball always "in play."

## ARA Council to Install New Officers in April

(Continued from Page 1)  
ies joined the Council in 1959 as ice skating commissioner after serving since 1950 in a similar capacity at GD/Convair where he was also a vice president of CRA for one term. Stutz is a charter ARA Council member and also a former square dance commissioner for CRA. He has served as ARA vice president and for the past year as treasurer.

Nominated for secretary were Archie Rambeau (Dept. 110-0)

and Cliff Kickbush (Dept. 971-5). Rambeau is basketball commissioner, while Kickbush is skin diving commissioner and a leader in the San Diego Council of Skin Divers' Search and Rescue Team.

Two treasurer candidates are Jack Garrison (Dept. 130-8) and Art Saastad (Dept. 032-60). Garrison, a Council member since 1960, is drama commissioner. Saastad joined the Council in 1961 as Bridge Club commissioner.

## ARA Calendar

General Dynamics/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**BIG BEAR TRIP**—Second edition of "Winter Weekend at Big Bear Lake," March 8-9-10. \$11 per person. Reservations by March 1 at employee services outlets.

**BRIDGE**—Play nights, Fridays, 7:30 p.m., CRA Clubhouse.

**COINEERS**—First shift meets today (Feb. 20), 7:30 p.m. Second shift, 1:15 a.m., Feb. 21. Both in ARA Clubhouse.

**DANCE**—St. Patrick's Day affair, March 16, El Cortez Hotel. Tickets 75 cents per person at employee services outlets.

**HI-FI CONCERT**—Free recorded concert in stereo studio, ARA Clubhouse, 7:30 p.m., Feb. 22.

**RUGBY**—Weekly workouts, 5 p.m., Wednesdays, ARA baseball diamond. Astro vs. South Coast, 2 p.m., March 3, at Astro.

**TEEN CLUB**—Regular dance, 7:30-11 p.m., March 2, ARA Clubhouse. Music by "Pastels." Admission 25 cents. One guest per membership card. Sports clothes suggested.

### Coiners to Meet In Double Session

Tonight (Feb. 20) is the night for ARA Coin Clubs.

Coiners, the first shift unit, will meet at 7:30 p.m. in ARA Clubhouse for nomination of 1963 officers, displays on Washington and Lincoln, and a "Quiz Show on Coins." A free 1962 dime will go to all attending.

After midnight—1:15 a.m., Feb. 21—the second shift ARA unit will gather for a coin swap session, and displays. A movie, "The Bowery Boys Meet the Monster," will be shown.

## Knutson Wins In Rapid Fire

Laurels in master class competition during recent .22 Camp Perry Police Course matches of ARA Pistol Club went to J. S. Knutson, who broke a 292 (7-X) tie with Gordon McPherson by besting him in rapid fire.

In the same match, the father-son combination of Bill and Ralph Jungk won their classes for the second consecutive match. The senior Jungk bested Ron Hughes 279-277 in expert class, while Ralph Jungk topped Dave Moss 245-224 in marksman category.

John Bennett bested Bill Worthington 268-267 among the sharpshooters.

In master class of a Center Fire Short National match, McPherson, ARA commissioner, won over Ralph Sanderlin, 279-271; Bill Jungk topped Angrim Carlson, 237-190 in expert class; Worthington fired 222 to Les Vivian's 216 in sharpshooter; and marksman Dave Moss fired 128.

## St. Pat's Dance Tickets 75c

A gala St. Patrick's Day dance will afford GD/Astro employees and guests an opportunity for "wearin' the green" March 16 9 p.m. to 1 a.m. in International Room, El Cortez Hotel.

Tickets for the affair are now available at all employee services outlets for only 75 cents per person.

Buster Carlson and his Astro band will play for dancing, while radio personality Fred Lewis and his wife will serve as intermission masters of ceremonies.

Presented at that time will be the 15 finalists in the 1963 Miss ARA contest, who were selected earlier this month.

For the agile—or for those sufficiently infected with the St. Patrick's Day spirit—Limbo and Twist contests will be held, with appropriate trophies for "survivors."

All in all, the ARA-sponsored event promises a full evening's entertainment at bargain rates.

## Ralph Gumtz Wins at Cape

CAPE CANAVERAL — Par-chasers among GD/Astro employees here held their annual ARA Championship Match Play Golf Tournament, playing over six weeks at various courses.

Three flights took part.

Ralph Gumtz fired a 78 to take the first flight championship over Pete Goetzman. Charlie Amedeo was runner-up. Jim Hammon bested Ken McCabe for second flight honors, while Bill McClure was runner-up. The third flight was won by Jerry Groah who edged B. B. Belt in the finals. Jack Lennon was runner-up.

During December a turkey tournament was held at the New Smyrna Beach course. Low net winners receiving turkeys were H. P. Broyles, Ken McCabe, C. Mullins, B. B. Belt, Warren Holley and Bill Logan.

## Jazz and Classical Concert Scheduled

Another in a series of Friday evening record concerts will be presented by ARA Hi-Fi/Music Club in its stereo studio, ARA Clubhouse, at 7:30 p.m., Feb. 22.

Club member Bill Vlyman has arranged a mixed jazz-classical program for the evening.

Included will be "Call of the Wildest" featuring Louis Prima and Keeley Smith; "Milanov Sings Operatic Arias"; Shostakovich Piano Concerto in C Minor with Victor Aller; and selections from Purcell, Stradella, Lully, Monteverdi and Fisher, featuring Roger Voisin, trumpet.

All GD/Astro employees and their families have been invited to attend the concerts. Admission is free, and refreshments will be served.



**FINALISTS**—From field of 60 candidates, these 16 are finalists in ARA contest to pick queen and court. Girls will appear March 20 in fashion show for final judging. They are Jackie Benton, Eleanor Boisselle, Elaine Carter, Joan Chapman, Mary Donnelly, Darleen Elson, Patricia Farace, Jean Francavilla, Jan Greer, Juanita Harris, Marsha Keller, Jean Lake, Virginia Mateja, Sandra Sandstrom, Lois Truitt and Ludmila Vlcek.—Photo by Jim Gavett.

## GD/Astro Beauties to Compete For 'Miss ARA' Title March 20

Sixteen of General Dynamics/Astronautics' "fairest" have been selected to compete for the title of "Miss ARA" during an "Ides of March" fashion show set for March 20.

Sixty candidates appeared for preliminary judging recently with members of the A.R. Aiders selecting finalists. They will model the latest fashions during the show and will be judged by a panel of outside judges. In addition to a "Miss ARA," princesses will be selected.

The queen and her court will reign over official ARA functions for the coming year. This

is the second year for the contest on an Astro-wide basis.

Finalists include Jackie Benton, Eleanor Boisselle, Elaine Carter, Joan Chapman, Mary Donnelly, Darleen Elson, Patricia Farace, Jean Francavilla, Jan Greer, Juanita Harris, Marsha Keller, Jean Lake, Virginia Mateja, Sandra Sandstrom, Lois Truitt, and Ludmila Vlcek.

Tickets for the March 20 affair go on sale today (Feb. 20) at all employee services outlets. They are \$1 each.

Fashions for the show will be from John Hogan of San Diego and La Jolla.

## Family Lessons in Horseback Riding Offered on Group Basis, Hour Weekly

A series of family horseback riding lessons has been announced under sponsorship of ARA Riding Club.

Lessons will be conducted on a group basis, one hour weekly for eight weeks. A fee of \$2 will be charged to cover insurance.

Class application deadline is Feb. 25, with forms available at employee services outlets at Plant 1, Plant 19 (formerly Convair Plant 2), and Plant 71.

Instruction and horses will be provided by Bonita Valley Farms.

On March 16 and 17, the ARA group will host a Western-style horse show in the recreation area arena, sponsored by Horseman's Executive Council.

Riding Club meets at 7:30 p.m., the second and fourth Tuesday of each month, in ARA Clubhouse.

## New Sailing Club To Elect Officers

Members of the ARA Sailing Club will meet at 7:30 p.m., March 4 in ARA Clubhouse to elect officers. Membership cards will be issued.

The club recently completed arrangements for sailing lessons at Mission Bay. Students will pay only for the use of a boat. Information is available from ARA office, ext. 1111.



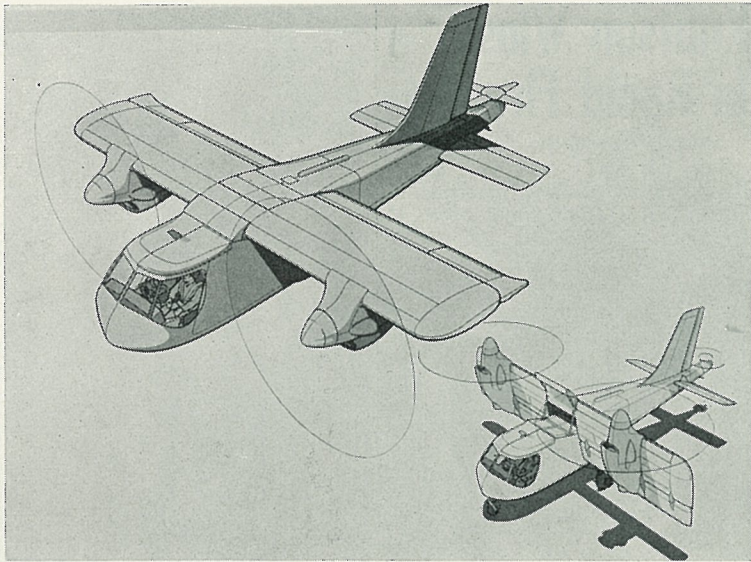


## Vertical Climb Plane Designed By Canadair Ltd.

Details of a new type of twin-engined transport aircraft that can take off and land vertically, hover like a helicopter and also fly at 350 miles an hour, have been revealed by Canadair Limited of Montreal.

Research on the new aircraft, called the CL-84, began six years ago and has been financed jointly by Canadair, the Canadian Defence Research Board and the Department of Defence Production. Canadair and the Canadian Government have now undertaken to go ahead together with further engineering work, and the development and construction of two prototypes to prove out the concept of vertical takeoff and establish effectiveness of this particular design. Total cost of the program will be \$10 million, of which Canadair will invest \$2.5 million dollars and the Canadian Government the remaining \$7.5 million. It is hoped that the project will eventually win production orders in world markets.

The aircraft has both short-run and vertical takeoff capabilities and is designed to perform a variety of specialized roles for both military and commercial purposes.



**VERSATILE**—Canadair Limited and Canadian government have undertaken go-ahead on prototypes of new CL-84, designed for vertical takeoff. Once aloft, wing swings to position for normal flight.

For vertical takeoff without the use of any runway, the CL-84's wing, complete with engines and propellers, swings through 90 degrees from the conventional position until it points upward. The aircraft then literally lifts itself straight off the ground by its propeller thrust alone, making no use of the wing for lift purposes. Once aloft, the wing swings down again to the normal forward-flight position. Vertical landing is achieved by reversing the sequence.

Under conditions where vertical takeoff is not essential, the wing of the versatile CL-84 can be set mid-way between the horizontal and the vertical to allow the aircraft to operate from very short, unimproved airstrips and carry even greater payloads.

For commercial purposes, the CL-84 is well-suited to short-haul passenger transport between city centers or in undeveloped areas such as the Canadian North, for surveying and prospecting, and for "flying doctor" services.

## Horne and Hicks National VPs Of Value Engineers Society

C. F. Horne, president of General Dynamics/Pomona and currently president of the Electronic Industries Association, has been named a vice president of the Society of American Value Engineers (SAVE).

SAVE president is Anthony R. Tocco, manager, value engineering, Space Technology Laboratories, Redondo Beach, Calif.

Serving with Horne are: Thomas D. Morris, Assistant Secretary of Defense, Washington, D. C.; George T. Willey, vice president and general manager, Martin, Orlando, Fla.; Marion L. Hicks, vice president, General Dynamics/Fort Worth; Dean Albert Everett, Northeastern University, Boston, Mass.; and William M.

## Technical Papers Deadline Nearing

General Dynamics people interested in submitting papers for the technical program of the 1963 Western Electronic Show and Convention are reminded that April 15 is closing date.

Three copies each of abstracts of 100 to 200 words and summaries of 500 to 1,000 words indicating related work and new contributions must be sent to the committee before that date. Military and company clearance must be made in advance.

Authors are asked to send material to Dr. Jerre D. Noe, WESCON technical program chairman, Suite 2210, 701 Welch Road, Palo Alto, Calif.

The convention will be held Aug. 20-23 at San Francisco.



C. F. Horne

M. L. Hicks

Allen, president, Boeing Co., Seattle.

## GD/E Contractor On Radio For Combat Jeeps

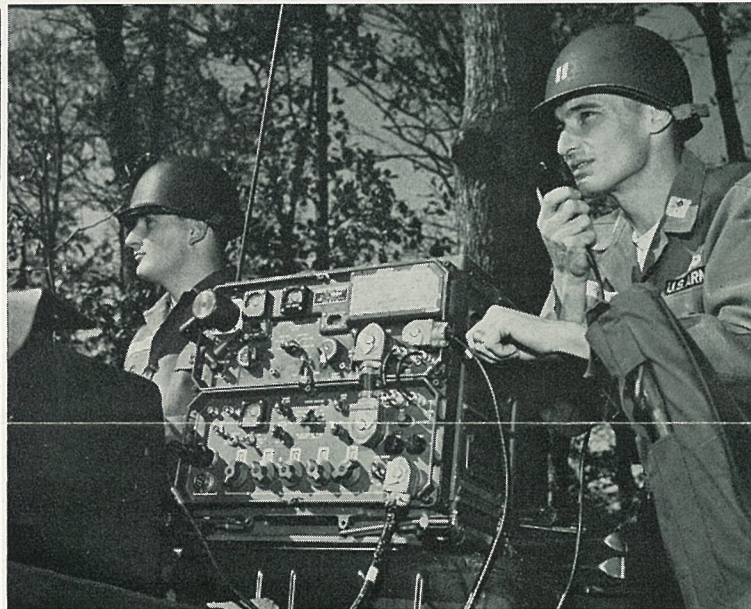
The Army has announced development and testing of an ultra-rugged lightweight jeep radio that greatly improves long-range combat communications between U. S. ground forces.

The two-way transistorized set, called "Angry-106" (from its official designation AN/GRC-106), is the first Army jeep radio to provide dependable 50-mile voice communications even over severe terrain obstructions. Under favorable conditions, its signal can easily reach a much greater distance.

The 100-pound radio is half the size and weight of the set it replaces, yet through use of advanced single sideband circuitry it provides ten times the effective signal power and twice the range.

"Angry-106" was completed in two years under a high priority test and development program by the U. S. Army Electronics Research and Development Laboratory, Fort Monmouth, N. J., and its contractor, General Dynamics/Electronics of Rochester, N. Y. This is half the time usually required for such a development.

In operation, the new radio provides initial long-distance communications when ground forces enter a new area, and enables a commander to maintain radio contact with widely dispersed forces in a fluid combat area, even while the "Angry-106" jeep is in motion.



**"ANGRY" JEEP**—Capt. Carl Herrmann operates newly-developed Army jeep radio (called "Angry-106") capable of distances up to 50 miles. Contractor is General Dynamics/Electronics-Rochester, N.Y.

The new radio has been put through rigorous tests in simulated combat. It operated perfectly after two airdrops, more than 3,000 miles of road tests,

and standard laboratory shock and vibration tests. In heat, dust, and rain it also proved superior to other sets of comparable size and weight.

## GD/Electric Boat Wins Contract For Study Of Decision Making in Combat Situations

A contract to study the most effective means of training men to make decisions in combat situations has been awarded to General Dynamics/Electric Boat, Groton, Conn.

The study will be performed by the human factors section of the Robinson Research Laboratory for the U. S. Naval Training Device Center, Port Washington, N. Y.

Special emphasis will be placed

on anti-submarine and anti-aircraft warfare as well as air early warning situations. A principal part of the study will involve the Submarine Tactics Analysis and Gaming (SUBTAG) device developed by Electric Boat.

This device duplicates a number of combat situations and provides an opportunity to test individual decision-making skills under controlled laboratory conditions.

A simple, inexpensive method of producing flat metal parts has been put into effect at General Dynamics/Convair after several years of development in the division's own sheet metal department.

Since 1958, when metal blanks (any flat part of irregular shape) were subcontracted to outside manufacturers, H. A. Mohr and H. M. Woodard, both Dept. 101, have been working on an inexpensive and satisfactory means of making such parts in-plant.

Their efforts over the years have resulted in blanking procedures which produce most aluminum, titanium, stainless steel flat parts at a fraction of the cost formerly spent in outside procurement. Complete records kept over the last year on 1,200 jobs substantiate their claims that clean, uniform, and high quality blanks can be made within the division at as much as a tenth of the former cost.

**Too, in emergencies — and emergencies become routine in many programs — parts can be turned out in a matter of two or three hours. Fastest time from order to delivery from outside companies is five days!**

As an example, Mohr cites one case when a rush order came through for a quantity lot of a certain F-106 spare part. There was no time to get them from outside the plant. He and his crew of experts went into action, stamping out 258 perfect parts in 3½ hours. Since then, 1,600 of the same part number have been blanked.

Now on hand are 1,300 different tools for blanking of commercial and military spare parts to provide customers with the fastest service possible. These tools can be used over and over indefinitely, turning out sharp,

true shapes in metal.

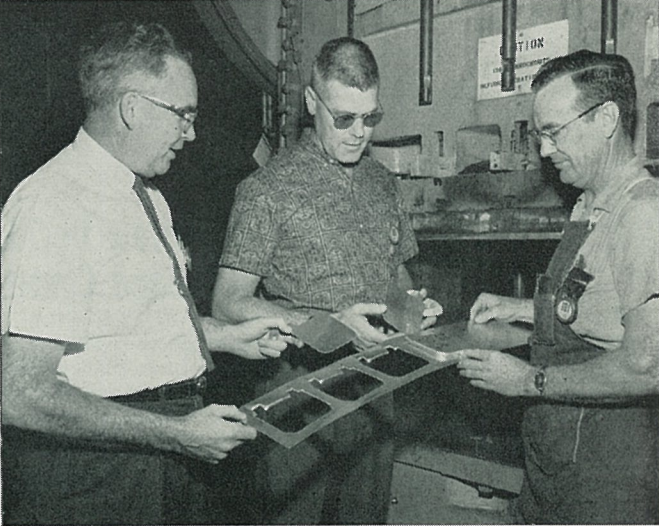
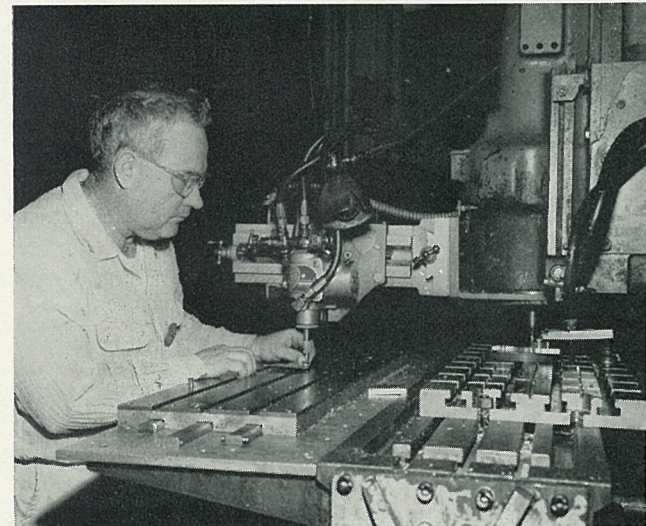
Another advantage of the new blanking method, besides its speed and accuracy, is that parts can be stamped out in multiples — at present, it is not uncommon to blank three at a time for urgent jobs, and as many as 10 different jobs can be shaped at once, depending on size and shape of parts and dimensions of the mass as a whole.

Mohr and Woodard credit the ingenuity of at least half a dozen Dept. 101 sheet metal machinists for devoting many months of work and trial and error in perfecting mechanical details of the new method now installed as accepted division procedure.

GD/Convair low-cost blanking facilities also are available now to other divisions within the General Dynamics family.



**VARIETY** — H. M. Woodard displays many sizes and shapes of flat metal parts blanked perfectly by GD/Convair method.



**INSTANT PARTS**—Shots above show steps in new GD/Convair-developed blanking procedures, now cutting costs to fraction of old methods: (at left) A. L. Davis of Dept. 101 traces blanking tool on True-Trace milling machine; (center) C. E. Alexander shapes corners of die for perfect fit while C. R. Thompson taps holes for

bolting of tools on standardized plates. At far right, H. A. Mohr and H. M. Woodard examine completed flat parts stamped from metal sheet held by Clint A. Wilson, punch press operator. Mohr and Woodard headed team which spent months of effort in development of low-cost blanking.





NO BLARNEY—ARA's Joyce Oviatt uses "do-it-yourself" Blarney Stone to call attention to St. Patrick's Day dance at El Cortez Hotel March 16. Tickets at 75 cents per person are available at employee services outlets.

## Highest 'In-Commission' Rating Given Atlas Weapon System

Atlas weapon systems, on duty with Strategic Air Command units across the nation, have been credited by the Air Force with

the "highest in-commission rating" of any prime Air Force weapon.

The report indicated a logistics achievement brought about by Air Force-General Dynamics/Astronautics teamwork was instrumental in this top "at-the-ready" rating.

Cited for special credit were monthly meetings involving General Dynamics/Astronautics and San Bernardino Air Materiel Area (SBAMA) leaders. Sessions, aimed at ironing out problem areas before or as they occur, are headed by men like Astro President J. R. Dempsey and Maj. Gen. Clyde H. Mitchell, SBAMA commander.

Also mentioned was the integration of aerospace ground equipment for Atlas and the constant state of readiness maintained by SAC missile crews for making Atlas one of the nation's best weapon systems.

## More Employee Recommendations Sought In Scientist, Engineer Recruiting Effort

Response to an appeal in General Dynamics NEWS for aid in recruiting qualified scientists and engineers for General Dynamics/Astronautics was encouraging, and more recommendations are being solicited.

Astronautics must add approximately 1,500 highly qualified engineers and scientists during 1963. They will fill key positions in present and future programs.

Personal contact is an important factor in attracting new employees and for this reason the recommendations of GD/Astro employees can be a deciding ele-

ment. That's why Astronautics would like YOU to introduce men and women YOU feel are qualified who may like to join General Dynamics.

Make recommendations on the accompanying form and deliver to your immediate supervisor.

Astronautics engineering personnel section will contact individuals recommended.

Questions concerning this effort may be directed to the professional placement and personnel section of industrial relations department, ext. 2133.

## 'Trouble-Shooters' Aim At Material Handling

One of every three employees—and ALL material with exception of such items as tables, chairs and office supplies—are involved.

The subject is material handling: a vital factor in maintaining and improving General Dynamics/Astronautics' competitive position in industry.

Now under scrutiny by a special working group established by President J. R. Dempsey under P. I. Harr, director of reliability control, and R. H. Gilliland, manager of quality assurance, material handling will receive increased emphasis throughout the year.

"Material" includes parts, supplies, assemblies, and finished products—from the smallest electronic component, to an entire missile!

"Handling" involves everything which happens to material, "door to door"—from the time it is received until a finished product is delivered to the customer.

This entire area will be covered by the three-man working group which includes L. S. Franklin, chief of quality assurance (chairman); V. G. Mellquist, chief of applied manufacturing research and process development; and George Lewis, division systems.

Deeply involved in the group's operation are N. D. Baird, Dept. 290, and H. L. Kennedy, Dept. 141.

Industry studies indicate that from 60 to 70 cents of every manufacturing dollar is spent on material handling.

"Our goal is to put GD/Astro 'out in front' by trimming this figure drastically," Franklin said.

First step in a four-part program established by the group is to increase employee awareness of the importance of proper material handling in slashing production costs.

With this aim, the group has adopted a slogan, "Damage Free in '63."

A second step has already been initiated, with assignment of "trouble shooters" to aid individual departments in improving handling techniques.

"Two area representatives have been assigned, and may be called upon for assistance at any time," said Baird. "John Ward will work in Bldg. 33 at Plant 71 (ext. 3529); and George DiMatteo, ext. 1493, is available at Plant 19 (formerly Convair Plant 2.)"

Baird urged that other material handling inquiries be directed to him at ext. 1275, Plant 71.

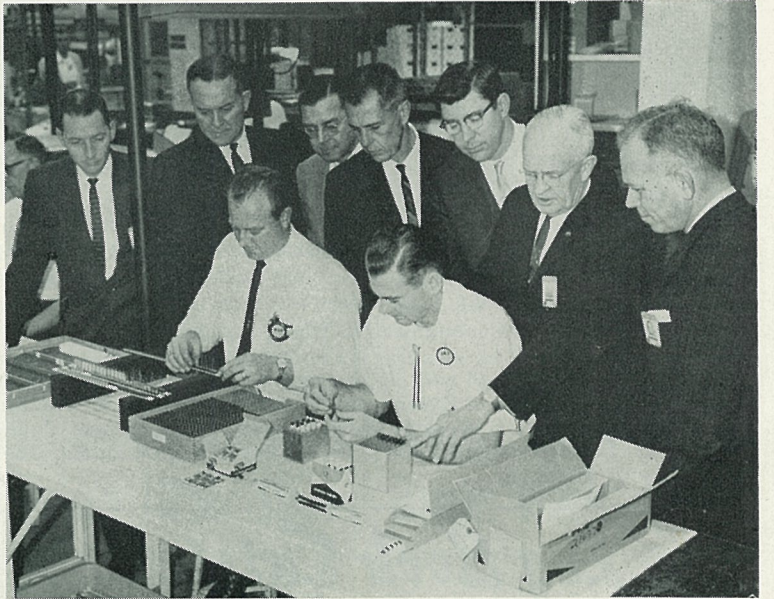
"The working group is designed to operate across departmental lines," Franklin explained. "We feel we can be of service in any phase of

GD/Astro's operations where material handling is involved."

Departments directly associated with material handling include reliability control (monitors and enforces handling procedures); plant engineering (maintains and uses handling equipment); production engineering (provides handling methods and instruc-

tion); stores and traffic (dispatches, routes and schedules); and manufacturing (the mid-point between materials and a finished product).

"Almost every employee can contribute in some way to improving material handling," Franklin concluded.



RIGHT WAY—R. L. Sattro (second from right) points out advanced handling methods used in receiving-inspection to members of GD/Astro materials handling working group. Standing, from left, are H. L. Kennedy, L. S. Franklin (chairman), R. H. Gilliland, V. G. Mellquist, N. D. Baird, Sattro, and P. I. Harr, director of reliability. Seated are technicians W. A. Jones and M. E. Golden.

## GLOTRAC's Antenna Produces 'Voice Throwing' Phenomenon

Imagine carrying on a conversation in a normal voice with someone up to a mile away—no strings (or wires, or radios) attached!

General Dynamics/Astronautics employees working with GLOTRAC, high-accuracy space vehicle tracking system, at a test field east of the main plant do it every day.

The trick? An acoustic phenomenon which turns GLOTRAC's 12-foot precision parabolic antenna into a "king sized" hearing—and speaking—aid.

The big "dish" acts as a lens, concentrating and directing sound waves—much as it fills its pri-

mary purpose of guiding radio frequencies. An experimenter has only to stand at the antenna focal point to become expert at "throwing his voice."

"We noticed the same phenomenon earlier when installing GD/Astro's AZUSA Mark II tracking system at Cape Canaveral," said Ed Carson, Dept. 782 assistant foreman, assisting GLOTRAC personnel during in-house acceptance of the system's equipment trailers.

"Still, it's a little eerie to 'overhear' conversations from the main plant, about a half-mile away," said E. C. "Lucky" Perkins, also assigned to the test field.



NO STRINGS—E. C. "Lucky" Perkins stands at focal point of inactivated GLOTRAC antenna to demonstrate "megaphone" characteristics. George Smith, foreground, cups ear only for pictorial effect. GD/Astro cameraman Bob Ries coached Perkins (on where to stand) in normal tone of voice while shooting picture!

I Would Like to Recommend . . . . .		Name	Tel.
Complete this form and give it to your supervisor. He will forward it to R. M. Smith, Dept. 130-90, Plant 71 (San Diego).		Address	
		(City)	(State)
Recommended by		His experience is in the field of.....	
Dept.	Ext.		
If we contact this individual, may we use your name as the person who recommended him?			
.....yes .....no.			





## Operations Support At Sycamore Again Wins Safety Honors

Operations support (Dept. 573-3) at General Dynamics/Astronautics' Sycamore Canyon Test Site continued to dominate annual standings for housekeeping and safety by winning the 1962 contest again.

In short, operations support has won three of the four annual contests.

This year maintenance section copped the honors, repeating a similar win two years ago. Last year Site 2 under Foreman G. R. Thomas won the honors for operations support.

W. F. Chana, Sycamore Canyon manager, recently presented a trophy symbolic of the honors to C. W. Graser, chief of operations support, and J. C. Byrne, maintenance foreman.

**TOP HONORS**—Maintenance section at Sycamore Canyon won annual good housekeeping-safety contest for 1962. J. C. Byrne, right, maintenance foreman, receives trophy from W. F. Chana, Sycamore Canyon operations manager.

## Mgt. Club Discounts Available To Remaining 'Myth' Lectures

Three lectures remain in the executive profile series sponsored by University of California Extension, with discount prices available to members of General Dynamics/Astronautics Management Club.

First lecture, held late last month, featured Allen Dulles, former CIA director, who discussed "Myth of the Communist Superman."

Up-coming on March 26 will be "Myth of the Over-worked Executive" by George Odiorne, director, Bureau of Industrial Relations, University of Michigan.

Clarence B. Randall, former president and board chairman of Inland Steel, will speak on "New Hemispheres for Business—Myth or Reality" on April 9.

The series will conclude with discussion of "The Myth of Success" by author Vance Packard, May 7.

Tickets are available from Management Club Boosters throughout GD/Astro facilities. All lectures are held in Pacific Beach Junior High School auditorium, 4670 Ingraham St., Pacific Beach.



**AT MARSHALL**—GD/Astronautics personnel involved in NOVA study program recently spent two days at Marshall Space Flight Center for quality assurance discussions. Shown during tour are Astro's Jim Duffy, R. A. Mueller, Les Dasso, W. G. Hardy, W. C. Wilhelm, M. O. Faiman and H. Hughes along with J. P. Bates, Dieter Grau and Fred Sittason of MSFC.

## Reliability Dept. Hosts Presentations

General Dynamics/Astronautics' reliability control department (140) is hosting a series of special presentations on Astro's Space Launch Vehicle supplier program which got under way this week.

Approximately 180 representatives of Astro purchasing functions will take part in the two-hour presentations. They are designed to afford a closer look at the latest developments, changes and requirements involved.

Sam Braun, chief of reliability control product verification procurement, directs this effort. He is assisted by Astro's educational services section and other reliability control personnel.

Each subject deals at length with various aspects of the program, including its relationship with military and NASA requirements.

## Astro Contributes To AF and NASA Study

General Dynamics/Astronautics was one of 29 scientific and engineering organizations contributing to preparation of the recently-issued "U. S. Standard Atmosphere, 1962."

The 278-page report provides a detailed description of the earth's atmosphere as required for space research and operations. It was prepared under joint sponsorship of the Air Force, National Aeronautics and Space Administration and the U. S. Weather Bureau.

## ATLAS RELIABILITY LAUDED BY AMES

VANDENBERG AFB—C. S. Ames, General Dynamics/Astronautics vice president—Space Launch Vehicle, was guest speaker at a "ladies night" meeting of Management Club here last month.

Over 225 members and wives heard Ames describe up-coming space probes utilizing the Atlas space booster, and ascribe to Atlas a high reliability level as attested by 17 recent successful space launches.

Management Club President Auggi Daddi presided at the dinner session held at Vandenberg Hotel, Santa Maria. Ames was introduced by R. D. Bergan.

## Plattsburgh Activity Concludes Vast Base Activation Project

Final phase of Atlas base activation operations was completed recently by General Dynamics/Astronautics, with conclusion of clearance activities at Plattsburgh AFB, N. Y.

Atlas base activation—considered the biggest national defense task in history—involved installation and checkout of 129 Atlas ICBMs and their launch facilities at 11 Air Force bases.

The base clearance program involved disposition of material, tools and facilities used during installation and checkout, with more than 34,000 different types of equipment to be inventoried and prepared for shipment to other Air Force installations.

Plattsburgh AFB was the last of six Series F Atlas bases to be

cleared, on, or ahead, of schedule.

Clearance was accomplished by teams of 80 to 90 GD/Astro employees who accounted for equipment items numbering as high as 100,000 for a typical base.

Pace-setters among clearance teams were those assigned to Altus AFB, Okla., and Dyess AFB, Texas, where work was completed nine and 10 days ahead of schedule, respectively.

## GD/Astro Fire Record Cited

Recent National Fire Protection Association statistics have ranked General Dynamics/Astronautics among the top 10 of 187 reporting facilities, in terms of effective fire prevention.

GD/Astro ranked ninth in 1962, 14th in 1961 and 18th in 1960. Since the Kearny Mesa plant began operation, GD/Astro has had no fire loss insurance claims!

Fire Chief A. C. Anderson had high praise for all employees for their conscientious efforts in preventing fires.

"Fire takes a heavier toll each year, and in 1962 claimed 11,800 lives and over \$1.5 billion in property in the U.S.," he said. "If all employees remain constantly alert to the dangers of fire, we can avoid adding to these statistics."

## TEEN CLUB DANCE SLATED MARCH 16

The casual touch—sport shirts and slacks for boys and school clothes for girls—will reign at the ARA Teen Club dance slated March 16, 7:30 to 11 p.m. in ARA Clubhouse.

One guest will be welcome with each membership card. Admission is 25 cents per person.

Teen Club is open to all GD/Astro sons and daughters upon approval of applications submitted by parents and available at employee services outlets.

ARA Commissioner John Hess will welcome parents who wish to assist in chaperoning regular club affairs.

## Log Book Entries



Veteran General Dynamics men received long-service emblems recently at GD/Astronautics. From left are: Edward B. Maier, Dept. 976-3, 25 years; Gilbert E. Rolston, Dept. 501-3, 25 years; Robert K. Whitney, Dept. 377-1, 30 years.

## Service Emblems

**MAIN PLANT**  
Service emblems due during the period March 1 through March 15.

Twenty-five-year: Dept. 671-1, J. J. Zamiska.  
Twenty-year: Dept. 250-4, James McMinn; Dept. 382-1, M. C. Sullens; Dept. 521-6, Bruce Graham; Dept. 564-3, F. L. Costa; Dept. 567-4, E. A. DiGiulio; Dept. 759-0, C. H. Holler; Dept. 833-2, Mary R. Hardy.

Fifteen-year: Dept. 101-5, Betty Ann Martin; Dept. 377-8, C. E. Quinton; Dept. 403, J. L. Browning, Harry Nebet; Dept. 527-5, Raymond Adamczyk; Dept. 662-3, R. A. Frey; Dept. 841-0, T. F. Schulze.

Ten-year: Dept. 101-1, Jack Wilsford; Dept. 130-6, H. C. Adams; Dept. 142-2, Alf. Halsey; Dept. 250-2, Allen Adkinson, J. C. King; Dept. 322-5, R. L. Costan; Dept. 335-3, Doris H. Runyan; Dept. 337-5, J. A. Dunleavy; Dept. 344-2, L. P. Raley Jr.; Dept. 374-3, D. E. Mobley.

Dept. 451-0, T. R. Beasley, M. A. Dunn; Dept. 535-3, W. J. Riney; Dept. 541-3, A. J. Huxtable; Dept. 549-3, A. R. Couillard; Dept. 592-4, J. E. Carlson; Dept. 662-7, G. E. Pugh; Dept. 682-4, Mary R. Gimber; Dept. 723-0, N. B. Byrd; Dept. 756-0, M. K. Spencer, W. W. Weger; Dept. 783-0, J. L. Flora, L. C. Neuhart; Dept. 812-1, F. L. Pike Jr.; Dept. 831-1, A. L. Borer; Dept. 964-3, D. L. Smock.

## Personals

**MAIN PLANT**

I wish to thank all of our many friends at GD/Convair Plant 1, GD/Convair Rose Canyon and GD/Astronautics for all the beautiful cards and flowers and so many kindnesses during the illness and death of my husband, Cecil Russell.

Juanita Russell, Inv. Records, Rose Canyon Facility.

**MAIN PLANT**

Please accept our humble thanks for your beautiful expression of sympathy upon the death of our beloved one, John F. Sullivan, Dept. 382.

Dorothy Sullivan and family.

## Deaths

**MAIN PLANT**

MARVIN—Charles, Dept. 100. Died Feb. 12. Survived by wife, Thelma.

## Retirements

**MAIN PLANT**

FRETHERM—Fred, Dept. 290-3. Retired Feb. 28. Seniority date, March 30, 1953.

## General Dynamics NEWS

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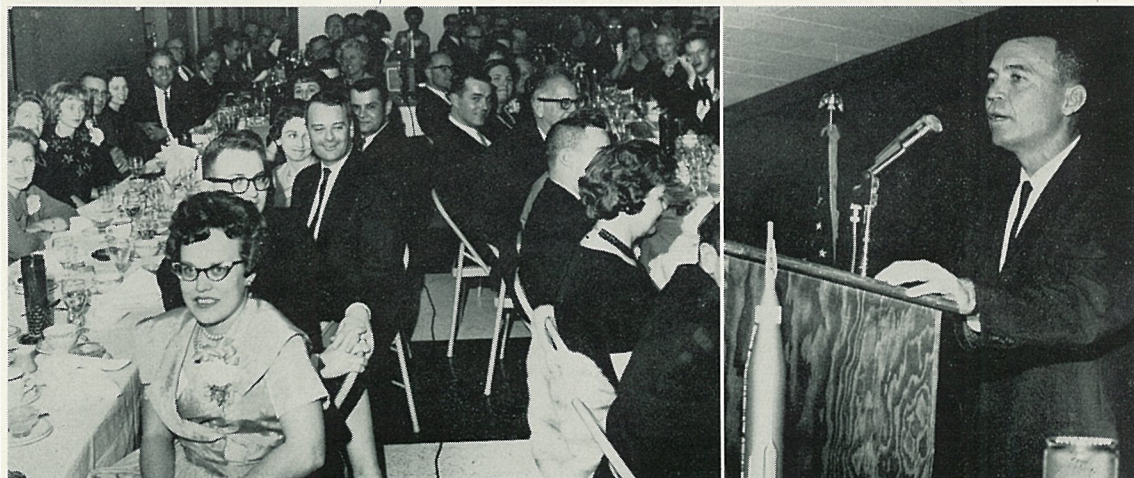
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**BUSY LIFE AHEAD**—Charles S. Ames, GD/Astronautics vice president-space launch vehicles, predicted long and useful life for Atlas missile during talk before GD/Astro Management Club at Vandenberg Hotel, Santa Maria. More than 225 attended.



# Atlas/Centaur Will Launch Strange Looking 'Moon Bug'

Surveyor spacecraft, that Atlas/Centaur will launch for soft-landing on the moon, looks like a space age bug.

Packed with scientific instruments, the craft will view, "feel" and even "chew" the moon's surface, transmitting its secrets back to earth.

Seven Surveyors are now programmed for one-way lunar trips to blaze a trail for future manned voyages. They will be launched by Atlas/Centaur vehicles built by General Dynamics/Astronautics. The Surveyor program mission is threefold: to provide astronauts who will land

on the moon with a foreknowledge of conditions essential to their safe landing and return; to develop techniques in control, guidance, communication and landing required for a successful manned voyage; and to obtain basic scientific data about the moon.

The program is a logical forerunner for manned missions and the focal point of National Aeronautics and Space Administration (NASA) plans at present.

It is one of the reasons the nation's highest priority—DX—has been assigned to development of the Centaur vehicle, a task that is occupying GD/Astro's most determined efforts.

Surveyor spacecraft are manufactured by Hughes Aircraft Co. for the Jet Propulsion Laboratory, manager of unmanned lunar exploration for NASA.

Resting atop the Atlas/Centaur launch vehicle, Surveyor will weigh approximately a ton when launched. After Atlas burnout and separation, Centaur engines will ignite and position Centaur in a 100-mile-altitude "parking orbit" for a brief period before striking out on a lunar trajectory. Ultimately, on command, Surveyor will separate from Centaur and continue alone, "navigating" by fixes on the sun and Canopus, one of the brightest stars. After 20 hours of its 66-hour voyage to the moon, Surveyor will be commanded to adjust its flight path by thrust of vernier engines so as to intercept the moon. Retro-rocket power will slow the spacecraft to about 6 mph for the descent to the moon's surface.

Three television cameras, two pointing up, one down, will send pictures back to earth. Above the upward viewing camera are gimbal-mounted mirrors capable of directing the television cone of vision through 360 degrees of azimuth and from 15 degrees to about 45 degrees below the horizontal line of the spacecraft.

Once landed, scientific instruments will collect lunar soil samples and make geo-chemical analyses, "feel" the lunar surface to assess its physical properties and measure radiation and particle fields of the moon's atmosphere.

Surveyor will operate on the moon's surface for about a month.

About 114 pounds of instruments are included in the 600 pounds of spacecraft that will touch down on the moon.

Atlas/Centaur launches of Surveyor will be made from Cape Canaveral.

## Ten GD/FW Engineers Receive Masters

Ten GD/Fort Worth employees—all of research and engineering organization—received master's degrees from Southern Methodist University recently. They are:

Master in engineering (aero major): William M. Curtis III.

Masters in civil engineering: Jerrol D. Clayton, Eduardo W. Gomez, John R. Hart, and Edward L. Hines.

Master in electrical engineering: Mark R. Pharr.

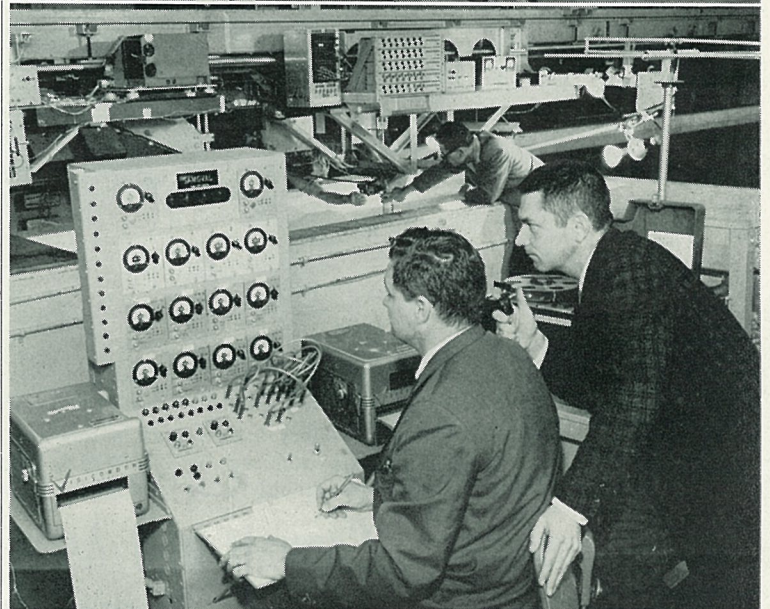
Masters in mechanical engineering: Clarence H. English, Hugh F. Hefley Jr., Robert L. Macy, and James H. Smith.

## Dynamics Praised For 990 Triumph

Kudos for Convair-built 990s come from Roger Bacon, Flight International magazine aviation writer, who wrote recently:

"The way in which General Dynamics has supported its jet airliner customers and triumphed over technical difficulties says a lot for the integrity of the company.

"If Convair were to produce another civil airliner, and if I had an airline, I'd buy it!"



**WATER FLUTTER**—In GD/Convair towing basin at San Diego (top photo) new recording system facilitates flutter research. In lower photo W. G. Walker, senior instrumentation engineer, watches gauges of mobile telemetering station, while Ted Sladek, senior hydro engineer, right, holds control that can stop specimen. In background are Lou Figueroa, in charge of hydrofoil strut tests, and D. H. Tribbet, hydro technician.

## Telemeter Device Flashes Data During High Speed Basin Runs

Hydrofoil component tests, conducted under a Navy research contract at General Dynamics/Convair's hydrodynamics towing basin during the last couple of months, have brought into being a new instrumentation recording system which greatly expands the basin's capabilities for vibration evaluation.

Research into the flutter characteristics of supercavitating hydrofoils (configurations which produce air cavities, or bubbles, back of the struts as they cut through the water) required a sensitive and versatile recording system to gather accurate data during high speed runs, explained R. C. Peller, design specialist directing the research program.

At his instigation, flight instrumentation engineers, under direction of L. R. McClain and V. J. Schack, instrumentation group engineers, evolved telemetering equipment which would record responses on tape that could be played back a number of different times at varying speeds and sensitivities.

Major sections include the mobile ground telemetering receiving station developed by W. G. Walker, senior instrumentation engineer, with the assistance of Dept. 31 technicians. Incorporated were components designed by Ken Jones and Joe Harris, also senior instrumentation engineers. D. K. Hall and H. A. Meyers were responsible for development of the transmitting package mounted on the carriage which speeds the specimens down the 300-ft. tank.

Now high-speed hydro tests can be conducted at 100 feet per second with reaction data flashed to the receiving station via the transmitting package from strain gauges measuring bending, torsion, pressure points, hinge movement, and velocity. Data is relayed as radio signals from an FM transmitter through an antenna on the receiving station and recorded on magnetic tape for later processing in the engineering data station. At the same time, the data also is recorded on a direct writing oscillograph at the receiving station while tests are in progress.

These direct oscillograph recordings can be processed in 10 seconds and viewed on the spot for quick evaluation for the next test step.

Magnetic tape records go to the data reduction station for either analog or digital conversion. End results can be in a variety of forms—IBM cards, plots, or tab sheets, as well as the permanent tape recordings which can be enlarged in scale for easy and accurate evaluation.

Most involved in the system's development at the data station's end of the line were W. A. Harpster, electronics engineer; H. A. Brown, engineering development technician; and C. R. Lewis, electronics engineer who has designed a new transistorized telemetering package.

Peller explains that, in gathering knowledge for future design of hydrofoil struts, 18 configurations with rudder-type and spoiler-type controls have gone through vibration acceleration testing in the towing basin. Louis Figueroa, senior dynamics engineer, has been in charge of the test program with Ted Sladek, senior hydrodynamics engineer, directing the test operations in the basin.

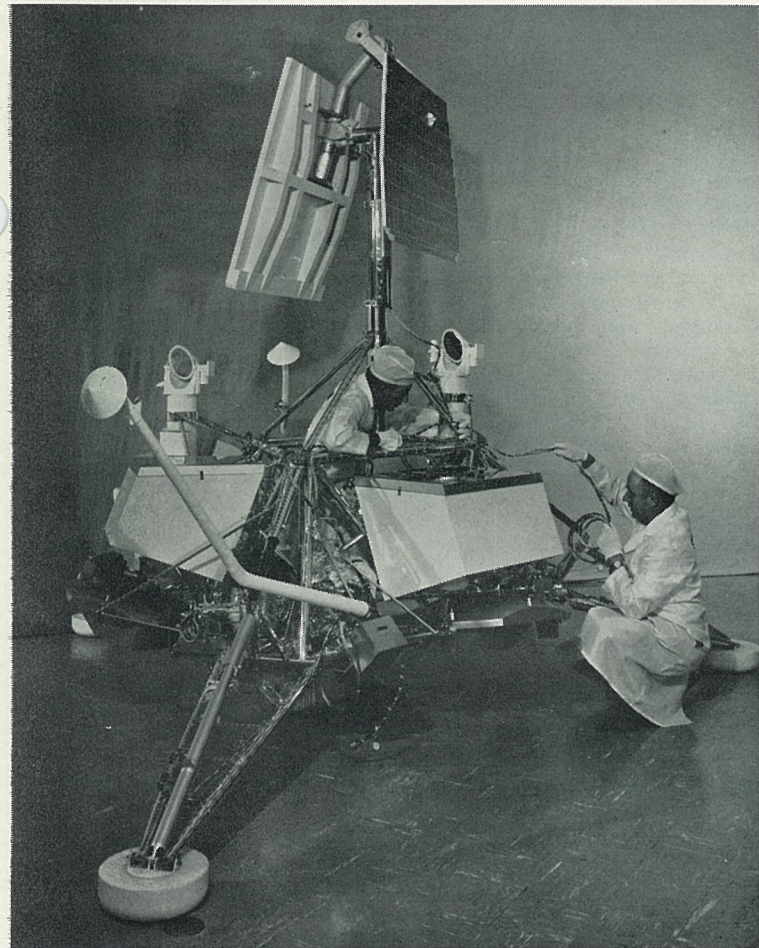
Other improvements recently updating GD/Convair's towing basin include an electro-hydraulic drive system. This gives fast acceleration to allow data accumulation throughout most of the specimen's run. Hydro test engineers have improved the carriage by installation of nylon wheels and silicone rubber shock absorbers; and a water tunnel, beneath the main tank, provides a new test means with visual observation for checkout of small models in moving stream of water.

Test projects currently under way in the basin, which is under direction of W. B. Barkley, hydrodynamics group engineer, with H. E. Brooke, chief of hydrodynamics, are evaluation of sea-plane takeoffs, missile impacts, ground effect machine stability, buoy and sonar body configurations, calibration work on meters.

## Safety Engineers Society Organized

Sam Rowland, GD/Convair safety engineer, is one of the first officers of the newly-formed San Diego Society of Safety Engineers.

Rowland will serve as secretary. Another General Dynamics man, B. Gawain Bonner of General Atomic, heads the group as president.



**MOON VISITOR**—This is spacecraft that Atlas/Centaur will launch for soft-landing on moon, scheduled for 1964. It will carry impressive array of scientific instruments.

## Volume Purchasing Continues To Score Saving For Dynamics

"Volume Purchasing"—by which single suppliers, chosen competitively, service more than one division of General Dynamics—saved the corporation more than \$1 million during 1962.

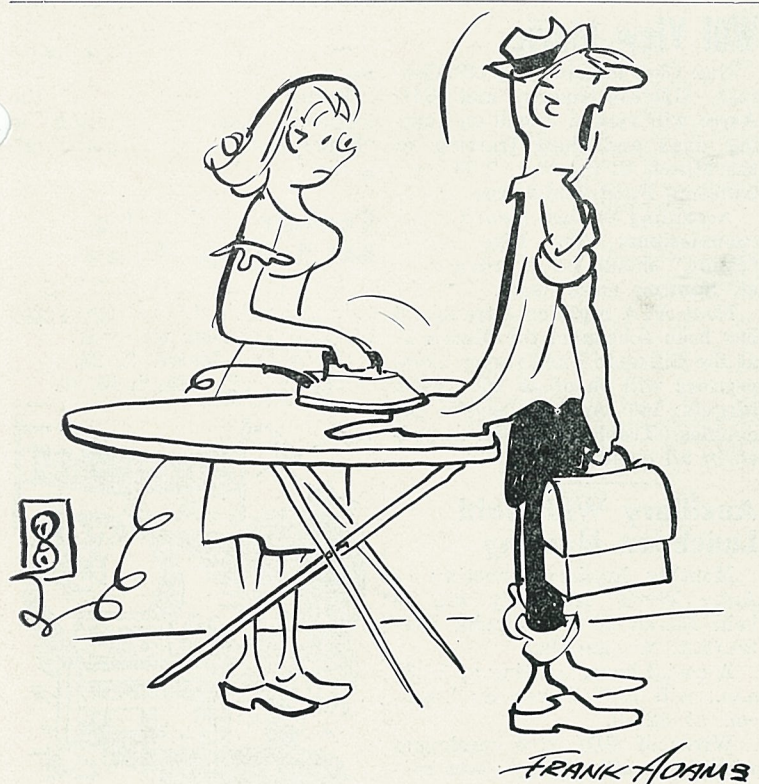
Items and services which are procured on a volume basis include maintenance and operating supplies, photo supplies, paints, auto fuels, auto rentals, janitorial items, industrial lamps, hotel accommodations, wire and cable, refrigerant gases, electrical connectors and semi-conductors, perishable tools, lumber, duplicating supplies, and equipment, typewriters, etc.

Of the approximately 70 agreements in force, one of the most recent to be renegotiated covers "cut paper" (bond, duplicator and

index papers).

Negotiated by General Dynamics/Astronautics' procurement under F. J. Traversi, vice president—administration, and director of material for Astro, the new agreement includes even more favorable prices for 1963 to the extent that an additional saving of \$50,000 is expected.

Under the Volume Purchasing Program, negotiations for new agreements or renewals are conducted by individual divisions on assignment from the corporation, and price benefits are available to all divisions that wish to take advantage of them. The corporation-wide program is coordinated by W. G. Evans, corporate director of materiel.



"I wish you'd think of these last-minute details before I'm ready to go to work!"

FRANK ADAMS





**FAST SLOPE**—General Dynamics skiers taking part in bus trip to Mammoth March 16-17 will be greeted with scenes such as this one admired by Bill Witzell and Joan Brennan on earlier visit to snow country. Weekend will feature annual races sponsored by ARA club.

## Skate Sessions Will Resume

Following a two months' "vacation," weekly ice skating sessions for GD/Astro, GD/E and GD/Convair folk will be resumed with a gala "Opening Night" party tomorrow (March 7) at the new Mission Valley Ice Plaza.

Admission is free, and refreshments will be furnished by Astro-Blades.

Only charge will be for skate rental (20 cents per hour).

All General Dynamics employees, their families, and guests are welcome, with admission by ID card, photo badge, or regular ARA-CRA Ice Skating Club membership card.

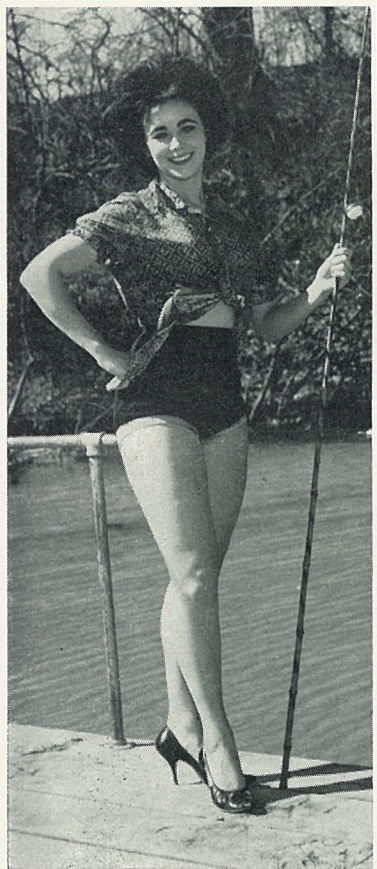
The weekly sessions will continue as long as attendance is adequate, according to Bud Davies, ARA commissioner. Sessions include private skating each Thursday from 6:30 to 8 p.m., after which skaters may continue as long as they wish with the general public, at no additional charge.

Special rates for members are adults, \$1; juniors (12-18), 80 cents; and children under 12, 60 cents.

A free instruction program consisting of three groups for beginning, intermediate and advanced dancers will be taught by Audrey Ericson.

The Ice Plaza is located in Mission Valley Shopping Center.

Applications for ARA-CRA Ice Skating Club membership (free) will be accepted opening night.



**LIZ TAYLOR?** — Nope, it's Gayle Baker, GD/FW steno, but resemblance is astonishing.

## Convair and Astro Snow Skiers To Visit Mammoth in March

The snows of Mammoth Mountain will be crisscrossed by General Dynamics skiers March 16-17 when enthusiasts from both Convair and Astro divisions travel there via chartered bus.

The trip is sponsored by the ARA Snow Ski Club and activities will include that group's annual races.

Major attraction is the bargain rate at which the trip is offered: \$19 per person, including transportation, lodging and two meals. Reservations will be accepted through March 8 at employee services offices at both divisions. Travelers will leave GD/Astronautics about 5:30 p.m., March 15, returning there late Sunday night.

Ski races will be open to all, although an entry fee of \$1 will be charged those who are not members of the ARA club.

Details of the weekend will be discussed at the Astro club's meeting tonight (March 6) in ARA Clubhouse, or may be obtained by contacting Gene Rockafellow, ext. 1581; Charlie Hill, ext. 1308; or Hal Moore, ext. 1487, all at GD/Astro main plant.

## NAS Civilians Shade ARA, CRA Pistol Teams

ARA and CRA pistol teams were topped by Naval Air Station civilian hot shots in pistol division of the recent NIRA Western Region Conference gun shoot.

Astro's team, with 1,142 points, was just 9 points behind the first-place NAS entry. Convair's team of Jim Halfacre, Ralph Picard, Vern Mardis, W. G. Walker finished third with 1,117.

## Sailplane Pilots Groom Craft For 17th Annual Championship

General Dynamics soaring experts will again have leading roles in the 17th Annual Pacific Coast Mid-winter Soaring Championships this weekend (March 9-10) at scenic Torrey Pines glider site.

Top sailplane pilots from California, Nevada, and Arizona will be competing for the coveted John J. Montgomery trophy awarded each year to the champion glider performance. It was won last year by John Williams, formerly of GD/Electronics. Another Montgomery trophy winner, Sterling Starr of GD/Astronautics, also will compete.

Spectators will have a chance to see two outstanding ships perform for the first time, said CRA Commissioner Don Larsen. Bob Beebe of San Francisco will bring his German high-performance KA6 and Ray Parker of Los Angeles will be flying a new "T-bird" all-wood high performance sailplane.

Jim Spurgeon of GD/Convair, as master of ceremonies, will announce and explain flying events from 10 a.m. to 5 p.m. both days. Contest events are spot landing, bomb drop, distance, altitude (Convair trophy), duration, and aerobatics, if air traffic permits.

Others helping with arrangements include Walt Mooney of General Atomic and president of the Associated Glider Clubs; Bob Baker of GD/Electronics; Bill Petrie of GD/Astro; Duke Mancuso, GD/Astro, who is preparing pre-meet publicity with Spurgeon; Paul La Freniere and Vic Korski of GD/Convair.

Among General Dynamics pilots expected to compete besides Mooney and Starr, are Duke Stallings, Ernie Shattuck, Al Owens, Keith Allen (son of Fred

Allen), DeVaughn North, all of GD/Astro; John Swinson of GD/Electronics; Steve Kesckes of GD/Convair.

Other well-known glider pilots entered are Williams, George Tweed, formerly of GD/Astro, and Gene Whigham, former CRA Glider Club commissioner.

There will be no charge for spectators but a \$1 parking fee will be collected.

## GD/E Senior Engineer Honored For Design

E. C. Gear, GD/Electronics senior chemist engineer, has been notified that his design of a molded electron gun has been selected for an award in the Materials and Design Engineering magazine's annual contest.

Gear will receive a cash prize of \$50 in addition to a plaque.

The newly-developed concept of electron guns, which are the source of cathode ray beams in cathode tubes, including the Charactron tube, has proved more precise and rigid than conventional guns.

Gear was instrumental in developing the new design during his assignment as GD/E project engineer in the field of electron gun development under a Navy Bureau of Ships research contract.

## Toastmasters Club To Elect Officers

Dynamic Toastmasters Club No. 457 will gather tomorrow night (March 7) for their annual election of officers.

The 6 o'clock dinner meeting will be held at Pernicano's restaurant on Fifth St.

## Well-Known Speakers Signed For NMA Area Conference

Management techniques will be stressed in the coming Management Conference of the NMA San Diego Area Council March 16 in University of San Diego's Moore Hall of Law.

L. G. Lawson of GD/Convair, area council president, said that at least 400 members of the six area clubs and guests are expected. The all-day conference, 9 a.m. to 3:30 p.m., is open to the general public. Admission, including luncheon, is \$5 for singles, \$7 for couples.

Well-known speakers on the program are Dr. Floyd M. Anderson, executive director, American Institute of Family Relations, who will talk on "The Greatest Management School — Your Home." Dr. William R. Parker, University of Redlands professor of social sciences, speaks on "The Key to Dynamic Living—Your Feelings," also during the morning session.

Afternoon lecture, "Greater Efficiency Through Group Ingenuity—Five Ways," will be by Max B. Skousen, management training specialist.

Assisting Lawson in arrangements are presidents of all six clubs, including Ed Russell, president of the GD/Astronautics group, and Al Fink, president of GD/Convair Management Club. Russell is in charge of promotion and publicity and Fink is chairman of the arrangements committee.

Wes Magnuson of Astronautics, area council treasurer, will act as treasurer for the conference and W. J. Wood of GD/Convair is chairman of the luncheon committee. General chairman is Robert Boomer, president of Ry-

an Electronics' club.

Tickets are available from Management Club members or at the Mission Valley Center Camera Shop.

## Pomona Team Wins Archery

GD/Pomona's Archery Club team took top spot in the recent Western Region National Industrial Recreation Association's telephonic archery tournament in mid-February, competing with four other West Coast teams.

Pomona bowmen piled up a score of 1,059 points in the handicap shoot with CRA archers trailing with 983 for second place. Astro's team was third with 868; Aero-Jet, fourth, 810; Fairchild, fifth, 640.

Three Convair archers had highest individual scores, without handicap, of any competing in the indoor park rounds. Bob Lorch of Dept. 401 was high man with 106 out of a possible 120 points. Harry Ross (Dept. 400) shot 101; CRA Commissioner Al Phipps, third, 97.

The Convair team shot its match at Balboa Park's Morley Field range while Astro team marked up their scores at the Astro Recreation Area. Commissioner Phipps was commended by San Diego Industrial Recreation Council for the part he played in directing the tournament.

## Rosters Required For IRC Volleyball

Rosters for GD teams planning to enter the men's volleyball IRC league must be turned into CRA and ARA headquarters by March 12, reminds Pete Beyrer of CRA office.

Already two Astro 10-man teams, one from GD/Electronics, and one from Convair's fire department have indicated their intentions to compete in the coming tournament.

A pre-season tourney the week of March 18 will kick off volleyball league play before teams go into a round-robin tournament during the next seven weeks. Games will be played in Balboa Park's Municipal Gym.

Entry fees for all General Dynamics teams will be paid by CRA and ARA.

Teams should be registered at CRA headquarters, ext. 1245, Plant 1, or ARA headquarters, Astro site, ext. 1111, before the deadline date.

## Heller Will Conduct Session on Values

E. D. Heller, manager of value control at General Dynamics/Astronautics, will join the nation's leading value engineering executives in presenting the 1963 National Value Engineering Conference April 10 at Los Angeles State College.

Heller will head one of the technical sessions, speaking on "Functional Definition and Evaluation."

## Convair and Astro Set Salvage Times

Saturday schedule at GD/Convair and GD/Astro salvage yards for the next four weeks is:

GD/Astro—March 9, 23, GD/Convair—March 16, 30.



"Wait 'til you see the one that won first prize."

## Garden Clubs Meet in Park

ARA and CRA Garden Club members will gather at 7:30 p.m. today (March 6) at the Floral Association Building, Balboa Park, for a joint meeting.

Meeting subject is fuschias, with two expert speakers on the agenda.

Albert Henderson of Henderson-Richard Nursery, Chula Vista, will demonstrate cutting back plants to obtain maximum bloom, while Frank Quintana of Country Squire Fertilizer Co. will discuss soils, potting media and fertilizing.

Several members will bring extra dahlia tubers to the meeting, where they will be shared with the club membership. A variety of fine door prizes will be given away.

ARA Commissioner Everett Henderson has announced that the club's joint Rose Show, slated April 21, will also be discussed.

## Gun Club Members Will View Movie

Gun Club members at GD/Convair, GD/Electronics, and GD/Astro will view a movie on hunting dogs and their training at the March 12 meeting, 7:30 p.m., Gillespie Field Clubhouse.

According to Jack Swank, CRA commissioner, the film, called "Point," should be of interest to all hunting enthusiasts.

Next ATA registered trapshoot has been scheduled for March 17 at the Gillespie Field range. Competitors will shoot at 100 16-yd. targets; 100 handicap, and 50 for doubles. Trophies will be awarded in all events.

## Auxiliary Will Hold Luncheon Meeting

Monthly luncheon meeting of Astro Wives' Auxiliary will be held March 20 at Islandia Restaurant, Mission Bay.

A social hour, starting at 11:30 a.m., will be followed by luncheon at 12:30.

Wives of GD/Astro employees wishing to attend may make reservations by calling Peggy Ferrera, 273-7634, or Hazel Hanson, 582-7843.



## Sports & Recreation



**CLASSIC KINGS**—Flanked by A. R. Mosco, left, and F. L. Erwin, GD/Astro Management Club sports and bowling directors, respectively, are winners of club's recently completed Singles Bowling Classic. Second from left is G. G. Ranney, runner-up, while Champion E. A. Jacobson is second from right.

## 'Miss ARA' Finalists to Model For 'Ides of March' Style Show

One GD/Astro wife and representatives of 14 departments, all finalists in the 1963 "Miss ARA" contest, will serve as models in the "Ides of March" fashion show to be held March 20.

Only 500 tickets are available for the show, which will be staged on GD/Astro's distinctive spiral staircase in Bldg. 2 lobby, starting at 8 p.m. Tickets may be obtained at employee services outlets for \$1 each.

Only non-employee in the show is Joan Chapman, whose husband, Gene, is in Dept. 756. Other contestants include Lois Truitt, Dept. 101; Jan Grier, Dept. 124; Jean Lake, Dept. 195; and Juanita Harris, Dept. 250.

From product support departments come Jackie Benton and Ludmila Vlcek of Dept. 322;

Sandra Sandstrom, Dept. 324; Patricia Farace, Dept. 331; Elaine Carter, Dept. 337; and Marsha Keller, Dept. 344.

Engineering is represented by Virginia Mateja, Dept. 523, and Jean Francavilla, Dept. 541; base activation by Eleanor Boisselle, Dept. 603; Space Launch Vehicle by Mary Donnelly, Dept. 631; and Centaur by Darleen Elson, Dept. 954.

The 16 finalists will model fashions provided by John Hogan of San Diego and La Jolla, before "Miss ARA" and her court are selected by a panel of outside judges.

Those attending will be eligible for a variety of valuable door prizes, and refreshments will be served following the show.

## 'Three Clubs and Putter' Golf Tourney Slated March 23-24

ARA Golf Club's tournament March 23-24 at Circle R will be a "three clubs and a putter" event, plus a blind bogey. Entries will be accepted by ARA headquarters, ext. 1111, between March 11 and 20.

Net scores of 70 won top honors in the club's February Sweepstakes at Rancho Bernardo for Paul Hooten, R. E. Cartwright, Hal Napier and Kay Stites in the 0-12 handicap range.

Low gross leaders in that bracket were R. McLain and J. Nichols with 72s, and Tom O'Laughlin and W. H. Wright with 79s.

R. E. Torrence had low gross in the 13-17 handicap class with 78, while Pat Bourgeois shot 81, and V. E. Rylander, 83. Low net honors were collected by L. Saltz with 67, L. L. Richardson with

68, and Gene Petzen with 69.

A. E. Lane shot 89, and B. H. Garrett and T. Strait had gross 90s in the 18-23 bracket, while Lou Canter led net scorers with 66. Bill Coleman had a net 67, while Paul Williams scored 71.

Among 23-36 handicappers, Dick Reid's 84 bested a 93 from J. N. Zinn, and 94s from T. Polsfut and Vern Boyer for low gross, while W. Eckard and C. Shinkle shot net 84s, and Phil Corbett, 86.

Picking up a ball each in the blind bogey were Bob Stevens, Herman Ochenduseko, Sam Engelman, Don Crayton, Frank Hockenberger, Lou Marine, John Jackman, R. Rendina, G. Bourke, Mark Pruitt, J. Taramagra, Jim Jones, Jim Duffy, J. J. Kiszla, Jim Busby, Hank Gallant and C. Jones.

## Varied Programs Slated in March For Members of Hi-Fi/Music Club

Friday night programs planned for March by ARA Hi-Fi/Music Club run from "schmaltz" to technical talks, to a "live" recital by a classical guitarist.

This Friday (March 8), A. E. Hill will serve as master of ceremonies for a recorded program featuring the Boston Pops and titled "Everything But the Beer."

Ron Graham will present a music lecture and demonstration on March 15.

Both these events are open, free, to GD/Astro employees and their families, and will be held in ARA Clubhouse.

On March 22, guest artist Alberto Torrez will perform classical guitar selections, using a val-

uable Ramirez instrument. Torrez is well known as performer and instructor in both Mexico and the San Diego area. A 50-cent donation will be asked.

All events start at 7:30 p.m.

### Jim Fortner Winner In Marathon Chess

A marathon lunch-time chess tournament in GD/Astro's Dept. 378-1 at Plant 1 concluded late last month with Jim Fortner named champion upon downing Hal Herod two of three games in the finals.

Other entrants were Johnny Powell and Glenn Bancroft. The tourney consisted of 36 games, played over a 1½-month period.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**BRIDGE**—Play nights Fridays, 7:30 p.m., ARA Clubhouse.

**DANCE**—St. Patrick's Day dance, March 16, International Room, El Cortez Hotel. Tickets 75¢ per person at employee services outlets.

**GARDENING**—Meeting 7:30 p.m. today (March 6), Floral Assn. Bldg., Balboa Park.

**ICE SKATING**—Free "opening night" session, 6:30 p.m., March 7, Mission Valley Ice Plaza. Regular sessions each Thursday thereafter.

**PHOTOGRAPHY**—Astro Lens' desert field trip March 17. Meet at Tamarisk Ranger Station, 8 a.m.

**PHYSICAL FITNESS**—Women's classes 5-6 p.m., Tuesdays, starting March 12, ARA Clubhouse. Register with Joyce, ext. 1111.

**PISTOL**—Matches start 9:15 a.m., March 10, SD Police Pistol Range, Home Ave. and Federal Blvd.

**RECORD CONCERTS**—Free. March 8, 15 and 22, 7:30 p.m., Hi-Fi Studio, ARA Clubhouse.

**SNOW SKI**—Mammoth trip and club races, March 16-17. Reservations through March 9 at employee services office. \$19 per person.

**TEEN CLUB**—Dance, 7:30-11 p.m., March 16, ARA Clubhouse. Music by "Del Fis." Members' admission, 25¢.

**WIVES' AUXILIARY**—Luncheon, March 20, Islandia. Reservations: Peggy Ferreira, 273-7634, or Hazel Hanson, 582-7843.

## Dance Tickets Sell at Bargain

Twist and Limbo contests will replace Irish jigs, but in other respects, ARA's gala St. Patrick's Day dance will take its theme from the Emerald Isle.

Scheduled for 9 p.m. to 1 a.m., March 16, in the International Room, El Cortez Hotel, the event is open to all GD/Astro employees and guests.

Bargain-rate tickets at 75 cents per person are now available at all employee services outlets.

Sixteen of Astro's fairest "colleens"—finalists in the "Miss ARA" contest—will be introduced at intermission, with radio personality Fred Lewis and his wife as masters of ceremonies.

Music for dancing will be provided by Buster Carlson and his Astro band.

### Zone 'A' Mgt. Clubs Set Bowl Tourney

Management club bowlers from throughout Southern California and Arizona will converge on San Diego March 23 and 24 for a "Zone A" tournament.

Festivities will center at Clairemont Bowl, with GD/Astronautics Management Club as host.

Fee is \$20 per team, with entries accepted through March 15 by F. L. Erwin, ext. 3509.

### Camera Club Plans Desert Rendezvous

A desert field trip will replace the regular meeting of the joint ARA-CRA Camera Club on March 17.

Members have been asked to assemble at Tamarisk Ranger Station in Anza-Borrego Desert State Park at 8 a.m., where specific instructions will be issued. Late-comers may obtain copies of the route from the Park Ranger.

### GOLF CLUB PLANS CIRCLE R SWEEPS

ARA Golf Club will hold its monthly sweepstakes March 23 and 24 at Circle R. Reservations for the event, open to club members only, will be accepted between March 11 and 20 at ARA headquarters, ext. 1111.



**FAMILY AFFAIR**—During GD/Astro annual controller's dance Jean Lake of estimating was chosen "Miss Controller." She appears with Emcee Joe Beagin, president of Girl Watchers International, and her husband, Ray Lake of GD/Electronics, who was "ninth" candidate.

## Explorers See 'Safari' Film

Baja California was focal point of recent ARA Explorers Club activities.

"Belvedere Expedition to Baja California," was the subject of a film presentation by Dr. George Lindsay, director, San Diego Museum of Natural History, at the group's late February meeting.

This covered a museum "safari" to the peninsula to collect specimens of plant, insect and animal life.

On March 2 and 3, club members traveled to the Laguna Salada region south of Tecate where they camped while exploring the site of numerous early Indian habitations.

GD/Astro employees and their families may join the Explorers Club by completing applications available at employee services outlets. Further information on the group is available from Paul DuPre, president, ext. 1154 or 4448 at Plant 71.

## Stamp Club Elects Hurlich President

New officers were elected recently by ARA Stamp Club, with the slate headed by Abe Hurlich, Dept. 591-1, president.

Fred Lawson, Dept. 536-7, is vice president; Mrs. Hurlich is secretary-treasurer; and Haydon LaNois, Dept. 662-7, is auctioneer.

Art King is ARA commissioner.

The group meets at 7:30 p.m., the second and fourth Thursdays of each month.

The group has extended a special welcome to young collectors.

At the February auction, 117 lots were offered, with members purchasing nearly 80 per cent. Adults covered the entire range of philately, with youngsters concentrating most interest on first-day covers.

## Rockhounds Show Work at Conference

Gem stones and mineral specimens valued at some \$25,000 were displayed when ARA Rockhounds played host to other area mineralogical groups at the Western Region NIRA conference at ARA Clubhouse last month.

Club members were on hand to demonstrate various lapidary equipment and techniques to conference delegates.

Next club meeting is slated for 7:30 p.m., March 13 in ARA Clubhouse. Members may contact Commissioner Fred Baugh, ext. 1446, to schedule use of the club workshop.

### LACROSSE PLAY CONSIDERED

General Dynamics/Astronautics employees interested in playing lacrosse have been asked to contact Steve Krueger, ext. 2284 at Plant 71.

## JEAN LAKE CHOSEN 'MISS CONTROLLER'

Jean Lake of estimating was named "Miss Controller" of General Dynamics/Astronautics when more than 430 persons attended the annual affair Feb. 16 at El Cortez Hotel.

Other candidates included Joyce Eveland (revenue management); Dee Lane (industrial accounting); Jean Castleman (AWS financial control); Pearl Weickersheimer (SLV financial control); Agnes Otto (general accounting); Caroline Yarnall (budgets); and Alice White (Centaur financial control).

Surplus proceeds from the affair are being earmarked for a special scholarship with details yet to be worked out.

## Gordon McPherson Tops Master Class

ARA Commissioner Gordon McPherson led master class contenders in two matches fired by ARA Pistol Club Feb. 24 at San Diego Police Pistol Range.

In a .22 Camp Perry Police Course he topped Roscoe Anderson, 294-290, while downing Ralph Sanderlin, 289-276, in a Center Fire Short National round.

Other Camp Perry class leaders were Angrim Carlson (282) and Harry Black (275), expert; Bill Worthington (266) and Les Vivian (260), sharpshooter; and Ralph Jungk (247) and Rod Eschenburg (222), marksman.

Warren Ranscht led Bill Jungk, 259-220, in expert class of the Short National, while Worthington's 209 topped 201 by Bob White among sharpshooters.

Next club matches will begin at 9:15 a.m., March 10, at the Police Range, Home Ave. and Federal Blvd.

### Physical Fitness Classes to Start

New physical fitness classes for women (employees and dependents) will be sponsored by ARA starting March 12 in ARA Clubhouse.

Dubbed "Trim-Fit," the course will be instructed by Jane Pershal.

Free sessions will be held each Tuesday, 5 to 6 p.m.

Registration will be accepted by Joyce Oviatt, ARA headquarters, ext. 1111, who can supply additional information.

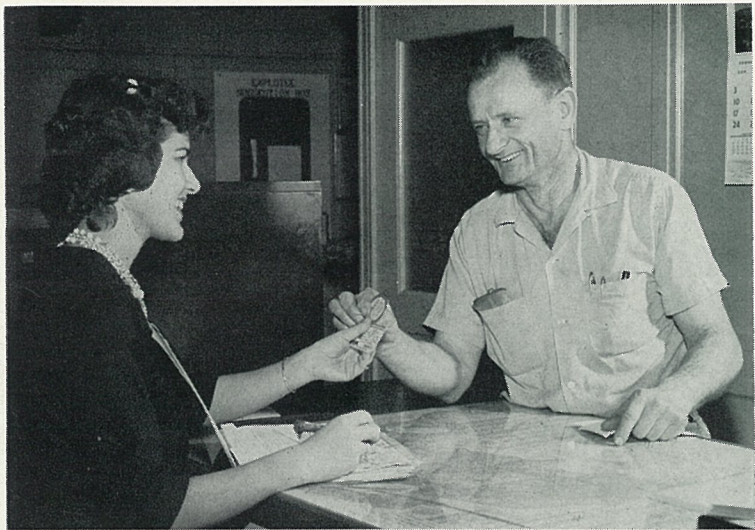
### Ballroom Dancers Meeting Regularly

An ARA-sponsored ballroom dance club has been formed at Astronautics and is seeking new members, according to Commissioner Ludy Moeller.

The group gathers at 9 p.m. each Monday (after beginning dance sessions) in ARA Clubhouse.

Dancers who have completed recent instruction are welcome to take part. Information is available through Moeller, ext. 841.





**OFF TO PAKISTAN**—Julius Singer, 19 years a GD/Convair employee, turns in his badge to Agnes Faught (Dept. 3) as he resigns his metalworking job for a Peace Corps assignment in East Pakistan.

## Veteran GD/Convair Metalworker And His Wife Join Peace Corps

A long-time General Dynamics/Convair metalworker left San Diego a couple of weeks ago on a journey which will take him half-way around the world to share his skills with the people of East Pakistan.

Julius Singer, 54, and his wife, Josephine, resigned from their jobs on the same day, Feb. 15, to realize their hopes of many months as they begin their training for a Peace Corps assignment in southern Asia. Singer, an expert metalworker and development mechanic in Dept. 101, left GD/Convair after nearly 19 years, while Mrs. Singer terminated her 10-year civil service clerical post at the Naval Hospital.

Their home was leased, their furniture sold within days of their departure to clear the way for culmination of months of planning and preparation for two years of service in a foreign land. Since Singer came to the United States in 1929 from his native Hungary, he said he has hoped for a chance to repay in some way what his adopted country has done for him—and the Peace Corps was his natural choice.

It took little soul-searching for the Singers to reach their decision to apply several months ago. They both feel that this is exactly, in their own words, "what they should do, and what they want to do."

Even mastering the Bengalese tongue doesn't faze Singer, who pointed out that, "I had to learn English, didn't I? And that was really hard!"

First stop on their itinerary will be Puerto Rico for two months' Peace Corps training, then will come another month of intensive study of the culture and language at the University of Colorado before final orders.

They leave two grown sons behind, Richard in GD/Electronics (whose first child, a son, was born Feb. 13), and Stanley, now on military leave from GD/Astronautics.

## Space Professionals Honor Grant Hansen

Grant L. Hansen, vice president and program director—Centaur at General Dynamics/Astronautics has been awarded a lifetime honorary membership in the National Society of Aerospace Professionals.

The honor was bestowed Feb. 21 by Bennett Moe, president, during a dinner meeting in San Diego. It recognized Hansen's "outstanding aerospace accomplishments." Hansen was principal speaker at the meeting.

## Security at GD/FW Sparks Idea to Control Guard Dogs Remotely by Radio Commands

The Air Force's heralded K-9 Corps may some day soon be "mechanized."

In a recent experiment at Carswell AFB's Sentry Dog Section, one of the "combat"-trained German Shepherds responded to commands given through a transistorized radio attached to his collar.



**BUSINESS END**—Guard dog at Carswell AFB, key figure in "radio control" project, warns GD/FW's Ernest Garcia to back off with that camera!

The idea belongs to GD/Fort Worth's industrial security department, which is working with the Air Force and local law enforcement bodies in the experiment.

The highly trained dogs now perform sentry duty at the end of a six-foot leash carried by their trainer, the only person from whom they will take commands. The man-dog team can cover the distance normally covered by three or more human sentries at night because of the dog's super-sensitive sense of smell. He can sniff out an intruder at distances of 300 yards and up.

If the dog could be trained to take commands through the collar radio—and Carswell trainers are confident he can—the canine trooper could conceivably cover a several-mile area.

Among those attending a recent demonstration were GD/FW's I. B. Hale, industrial security manager; Phil F. Cummins, development project liaison; Mason Lankford, industrial security investigator.

## State Makes Study On Women's Jobs

Mrs. Rebecca H. Sparling, design specialist at General Dynamics/Pomona, has been named to an informal advisory committee for the Department of Education, State of California.

Mrs. Sparling was in Sacramento Feb. 21 for a meeting on technical and semi-professional jobs for women, including engineering aides, electronic technicians, mathematicians and drafts-

# Importance of Value Engineering In Obtaining Contracts Outlined

Value engineering and its increasing importance to all companies seeking government contracts was stressed by Lt. Col. Roy E. Tavasti of USAF Headquarters, Washington, D.C., during a recent one-day visit to General Dynamics/Convair.

Lt. Col. Tavasti, of the Office of Directorate of Procurement Management's labor relations branch, brought with him the Air Force's recently-compiled film on value engineering to show General Dynamics key personnel in the San Diego area. At the Feb. 21

preview were management and value control representatives from GD/Astronautics, GD/Electronics, GD/Convair, and AF plant representatives.

The film soon will be available for showings throughout industry. Plans are under way for a public presentation at a coming Society of American Value Engineers session, said H. P. Williams, GD/Convair value control manager.

Lt. Col. Tavasti also reviewed latest revision of the AF procurement regulation 70-16 and Armed Services procurement regulation

revision 13 which spells out requirements of value control programs within companies submitting proposals for Air Force and Department of Defense contracts.

During an informal discussion preceding the film showing, GD/Convair President J. H. Famme re-emphasized the "importance of top management understanding and backing value engineering for effective in-house programs," stating further that "real success comes only when all decision-making people have the value vs. cost state of mind."



**VE REVIEW**—Lt. Col. Roy E. Tavasti, USAF Hdqtrs., Washington, D.C., meets with GD/Convair President J. H. Famme (right) and H. P. Williams, value control manager, during value engineering discussion at San Diego division.

## 'Gold' Paper Clip Value Symbol At GD/Fort Worth

The lowly paper clip has become a "status symbol" at GD/Fort Worth.

King-sized clips, coated with gold, are now given to graduates of value engineering seminars at FW.

Their purpose: to serve as a tie clasp.

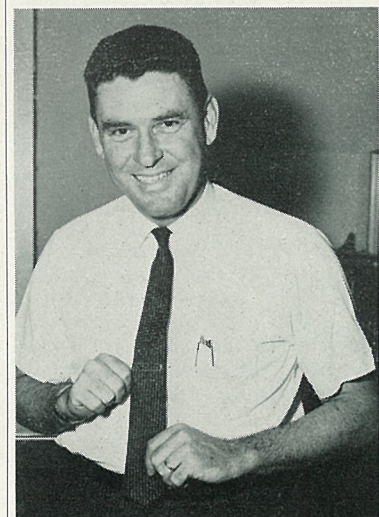
"The aim of value control is to accomplish a function reliably at the lowest possible cost," said Rand Creasy, deputy value control coordinator.

"We feel we've done this by substituting an attractive 3½-cent item for one that ordinarily costs \$1 to \$2.50. The paper clip performs the same function at infinitely less cost."

Graduates of VE classes 13 through 19—recently completed—have received the gold-plated trademarks. Those who attended classes one through 12 may obtain a clip by contacting either Creasy or Bill Nutt, value control training coordinator at GD/FW.

"These gold-plated tie clasps can serve as an important reminder that GD/Fort Worth is value-engineering conscious," the coordinator added. "We'd like for our people to wear them both in plant and when away from the company on business."

"It signifies we care about cost."



**REAL VALUE**—G. I. Davis secures gold-plated paper clip worn by VE seminar graduates as symbol of GD/FW division's cost-consciousness.

## Dynamics' Value Committee Plans Two-Day Chicago Meet

Fifteen value engineering key personnel from 10 General Dynamics divisions, Canadair Limited, and Corporate Office are expected to attend a meeting of the General Dynamics Committee on Value Control in Chicago, Ill., March 21-22.

They will hear W. R. Feichtinger, chief value engineer, U.S. Navy Bureau of Weapons, discuss the latest planning in BuWeps on value engineering. Only other speaker from outside the Corporation is W. G. McMurry formerly of GD/Fort Worth, now value control administrator, Military Products Division of Motorola, Inc., who will talk on "Your Responsibility to Your Vendors."

General Dynamics men on the two-day agenda are E. W. Feddersen, GD director of manufacturing engineering, who will open the meeting and close it with a

summary of activities and assign projects; H. P. Williams, GD/Convair, "After Training—What Then?"; F. B. Kohrs, GD/Electric Boat, "Contracting for Value Engineering"; M. M. Reeder, GD/Electronics—SD, "Reliability Through Value Engineering"; W. G. Evans, GD director of material, who will analyze value engineering portions of the Armed Services Procurement Regulation; W. P. Roberson, GD/Fort Worth, "Can the Computer Price Our Products?"

Also present will be E. D. Heller of GD/Astronautics; E. H. Conklin, GD/Pomona; L. W. Droel, Stromberg-Carlson division; J. E. Hill and A. S. Ross of GD/Electronics—Rochester, N.Y.; Karl Michelson of Canadair; R. J. Lutz, GD director of advanced projects; and representatives from Electro Dynamics and Liquid Carbonic divisions.

## Infrared Radiation Absorption Probed by Balloon to 118,000 ft.

A select space science laboratory team under Dr. Michael Griggs is busy this week at General Dynamics/Astronautics transposing data from a unique space probe conducted Feb. 22 by Astro.

The probe, believed to be the highest balloon-borne infrared radiation measurement ever attempted, was conducted over Arizona.

Studies were made of the amount of infrared radiation absorption by the atmosphere up to altitudes of 22 miles. Information gained may help in the design of military space detection systems, as well as to provide astronomical and meteorological data.

Project leader was Dr. Fred Casal, Astro staff scientist. He directed a six-man Astronautics crew that launched the 128-foot diameter balloon containing 800,000 cubic feet of helium gas.

Launch occurred at 9:37 a.m. at an Army test site near Yuma.

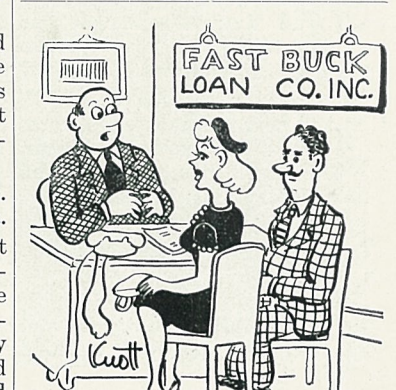
Instrumentation carried aloft included a specially designed interferometer spectrometer, made available by the Air Force Cambridge Research Laboratory through Louis Block. It recorded infrared heat wave lengths and relayed information back to earth via radio signals.

The balloon rose to 118,000 feet.

At approximately 12:30 p.m. signals were sent to the balloon to release the payload, which returned slowly to earth below the deflated balloon. Recovery was at 1:25 p.m. near the Merana Air Force strip north and west of Tucson.

Astronautics funded the balloon test with the Air Force supplying the special instruments and vehicles. The U.S. Navy also assisted.

Astro's space science laboratory is headed by Dr. A. E. S. Green.



"Your wife is nice but she isn't the kind of collateral I had in mind."





NOT ANOTHER!—Cydney Garrison shows dismay at still another batch of forms arriving for survey at Astronautics. Division-wide effort is now under way to control and possibly eliminate one-fourth of the more than 6,000 forms now in use.

## 250 Pint Goal Set For Bloodmobile

Annual blood donations from General Dynamics/Astronautics employees in administration departments are now being solicited for a Bloodmobile visit slated April 11.

Goal of the current drive is 250 pints.

Blood donors are needed to replace supplies depleted by recent heavy demands, and to build reserves for future use.

Following arrangements made within departments, volunteers will be transported via shuttle bus to ARA Clubhouse where the donor station will be set up.

## 'Commonality' Stressed In GD/FW's F-III Bid

General Dynamics was more disposed toward commonality as a philosophy than was its competitor in the F-111 competition.

This observation was made by Richard Austin Smith, author of a two-part article in Fortune Magazine entitled "The \$7-Billion Contract That Changed the Rules." The first installment appeared in March.

In the article Frank W. Davis, GD/Fort Worth president, was quoted as saying: "We read the work statement as putting significant emphasis on commonality. We went to a great deal of trouble to have a common structure, and paid some weight penalties to do it—some performance penalties as well, on both Navy and Air Force versions."

Throughout the competition, the article said, Air Secretary Zuckert repeated his manifesto: "The name of the game is a single plane for two services."

(Defense Secretary McNamara had decided that the versatile F-111 could be made to fill requirements of both the Navy and Air Force, and thus become the cornerstone of his effort to cut costs.)

"Boeing's strategy," the article said, "was not so much to oppose McNamara as it was to design for the Navy and the Air Force better planes than their individual requirements called for."

"It would thus bank on the hope that the best plane would be irresistible, regardless of commonality... a tremendous amount of effort would be put in the Air Force version of the TFX... but the separate Navy version would

## GD/Astro's 6,000 Forms Given a Critical Eye

Paperwork, an inescapable burden affecting every employee, is being investigated closely through a new program at General Dynamics/Astronautics.

Focal point of the program's forms control phase is a thorough study of the more than 6,000 different forms currently in use at GD/Astro. Each is being analyzed as to cost, effectiveness and actual need.

Those responsible for the program feel it may ultimately lead to as much as a 25 per cent reduction in the number of forms

required in-plant.

GD/Astro currently pays from a tenth of a cent for a time card, to \$2.22 for a drawing sheet used for detailed blueprint drawings. Usage ranges from about 100 copies of one form each year, to more than a million copies of another.

Most used: "AVOs" (Avoid Verbal Orders) of which some 1,860,000 are issued annually!

J. H. Johnson, director of management systems, explained the need for the study in the light of good business principles relating to general cost reduction.

"For every dollar spent on designing and acquiring a form, anywhere from \$20 to \$40 (a conservative figure by many estimates) is spent to process that same form," Johnson said.

"Obviously, a reduction in the number of forms required to do business is an excellent means of lowering operating costs—something of vital importance to each of us at this time."

Frank J. Traversi, vice president-administration, has authorized an organization within management systems (Dept. 150) for control of all GD/Astro paper work from "cradle to grave." This is reports and records management section of organization and systems department, and has three major functions: forms control, reports control, and record retention.

Last month a division-wide survey was instituted in which each department was requested to submit copies of all forms used within the department—each classified according to detailed instructions.

While most departments have responded, others are still at work on the task.

First department completing its survey was revenue management (Dept. 196-0, -1, -2 and -3). Its forms package was delivered on Feb. 28 by Ralph Grant, departmental forms monitor.

Obviously, next phase of the program cannot be carried out completely until ALL departments have responded.

Forms submitted are being sorted, subjected to further classification and identified as to functional use. Next step will be final determination of cost, effectiveness and actual need for each form.

## Mariner II Scientist Featured Speaker

Dr. Conway W. Snyder, Mariner II project scientist from Jet Propulsion Laboratory, was featured speaker during a recent San Diego Chapter, American Institute of Aeronautics and Astronautics, meeting.

Dr. Conway discussed scientific experiments carried out by Mariner II following its launch from Cape Canaveral aboard an Atlas/Agena vehicle last August and through its fly-by of the planet Venus.

## HELLER SPEAKS TO ACCOUNTANTS

E. D. Heller, manager of value control at GD/Astronautics, spoke on "Accounting Contribution to Value Engineering" at the March 13 meeting of the San Diego Chapter of the National Association of Accountants held in Town and Country Hotel.

## Base 'Cleansweep' Project Success

Since mid-October, fast-moving teams of Atlas program veterans have shifted between six states carrying out Operation Cleansweep.

This month the program was completed, well ahead of schedules.

General Dynamics/Astronautics performed Operation Cleansweep at six Strategic Air Command (SAC) bases equipped with silo Atlas launch complexes. It included late changes, modifications and final adjustments to further enhance the readiness of these facilities as deterrent weapons.

The program started under P. M. Prohett, then director of base activation. Early this year it shifted to product support under Director E. A. Reynolds. Special field teams reported directly to Lou Lau, assistant to E. J. Huntsman, manager of off-site operations.

Teams at each base numbered about 180 members. Each was made up of skilled and experienced base activation personnel from many groups, making each a self-sustaining organization. At bases where deactivation was complete (Lincoln and Schilling AFBs), teams were brought in. At other bases teams drew on personnel then on hand, plus specialists brought in. Each was headed by a chief of operations. Filling these key posts were Dick Dodd at Lincoln, V. W. Higginbotham at Schilling, Harvey Sterling at Plattsburgh and Altus and Al Southard at Walker and Dyess.

Major John Hall, Ballistic Systems Division, coordinated all Air Force operations.

Bases were phased into the program on set schedules, ranging from Oct. 18 through Jan. 7. Completion ranged from Dec. 28 through early this month.

All but a single base finished on or ahead of schedule. One base (Altus) was 22 days ahead of schedule.

At Walker and Plattsburgh AFBs Operation Cleansweep ran concurrent with final installation and checkout of Atlas facilities. At others it followed this work.

Restrictions were exacting. For instance, no complex was phased into the program until all personnel, plans and parts (shipped in kits from San Diego) were on

(Continued on Page 2)

## High Praise Earned By Base Operation

Col. J. R. Harris, director of the Atlas systems program at BSD, had this to say about Operation Cleansweep in a letter to President J. R. Dempsey:

"I would like to take this opportunity to congratulate you and E. J. Huntsman on the outstanding manner in which the division (GD/Astronautics) has performed on this program, achieving completion well ahead of schedule and at a substantial saving in manpower costs."

"The energy, devotion and skill displayed by Mr. Huntsman and his subordinates in the field as well as the splendid support provided by the rest of the division have set an example which can be pointed to with pride and which can be used as a worthy goal for similar programs in the future."

## Action Groups Will Ride Herd On Materials

Material handling at General Dynamics/Astronautics made a major stride this week with announcement of plans for five material handling Action Task Groups, plus suggestion of a "credo" for all employees involved.

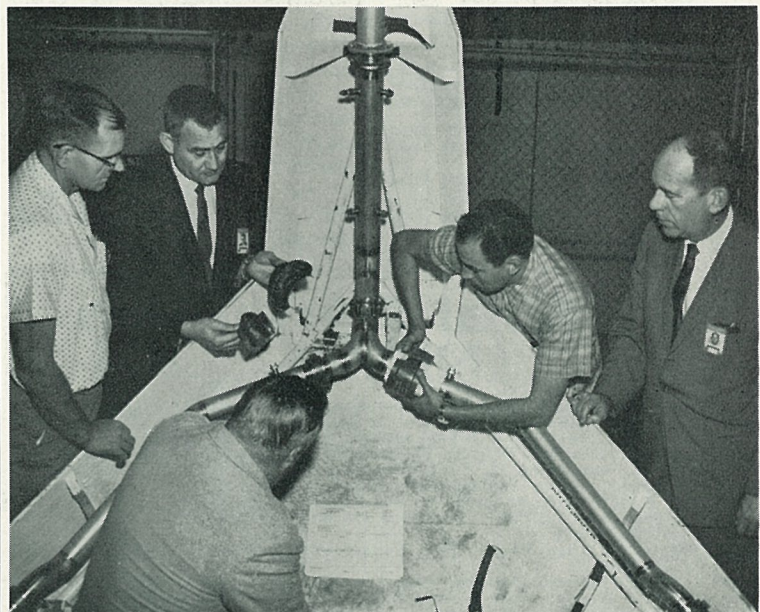
The moves are part of an accelerated program for improvement of material handling techniques, to keep aerospace materials at GD/Astro "Damage Free in '63."

Increased impetus was supplied earlier this year with establishment of a material handling working group headed by L. S. Franklin, chief of quality assurance (General Dynamics NEWS, March 6).

"Proper material handling plays a major role in improving our competitive position within the industry," Franklin said. "And good material handling depends upon adequate equipment, 'know how'—and common sense."

Three-point "credo" suggested by the working group for the

(Continued on Page 2)



DOLLAR SAVERS—Simple but effective plastic shields to protect delicate couplings on space vehicle fuel transfer lines during handling are demonstrated to Vice Presidents W. W. Withee and E. D. Bryant, both closely associated with material handling program. Standing from left: A. E. Yeager, Withee, A. T. Medina, Bryant. Kneeling is Al Stebbins.



## Log Book Entries



GD/Astro men now wearing 25-year emblems include John J. Zamiska, left, Dept. 671-1, and Donald O. Wyman, Dept. 853-3.

## Service Emblems

### MAIN PLANT

Service emblems due during the period March 16 through March 31.

Twenty-year: Dept. 170-4, R. W. Kleinhans; Dept. 401-3, J. D. Melton; Dept. 454-0, B. E. Landgraf; Dept. 579-3, Isaac Polhamus; Dept. 718-0, J. A. Carrera; Dept. 970-2, Eva M. Christensen.

Fifteen-year: Dept. 451-0, A. K. Grosse; Dept. 545-6, R. S. Hyatt; Dept. 590-0, Esther A. Jordan; Dept. 759-0, M. L. Breckenridge; Dept. 782-0, L. G. Prine; Dept. 835-1, Anna R. Lassen.

Ten-year: Dept. 130-1, J. E. Kennedy; Dept. 146-4, J. A. Long; Dept. 250-3, L. B. Richards; Dept. 374-0, John Prunty; Dept. 382-1, T. J. Minac; Dept. 403-4, Mildred G. Clark, Takashi Sawasaki; Dept. 451-0, Herbert Erbe Jr., F. R. Payne, D. E. Shuman, E. D. Smith.

Dept. 526-9, T. D. Kentner; Dept. 527-3, G. A. Vasicek; Dept. 714-0, Dorothy B. Boehmke; Dept. 733-0, Eugene Simmons; Dept. 756-0, L. E. Kopp, R. D. Lechien; Dept. 781-0, Jo Choyke; Dept. 782-0, J. R. Weaver; Dept. 833-1, R. R. Mendiola; Dept. 965-3, V. L. Bacon; Dept. 976-3, B. L. Oliver.

### LINCOLN AFB

Ten-year: Dept. 616, J. F. Herron, L. E. Johnson.

### PLATTSBURGH AFB

Ten-year: Dept. 620, A. L. Rader, R. A. Satterberg.

### SYCAMORE

Twenty-year: Dept. 573-3, E. C. Budzinski.

Fifteen-year: Dept. 573-6, D. A. Averill.

Ten-year: Dept. 573-3, J. P. Gore.

### WALKER AFB

Ten-year: Dept. 619-3, H. D. Reece.

## Papers Presented

ACKERMAN—Anton, Dept. 375-2. "Gas Sampling for Solid Particles," American Society for Testing Materials, Tulsa, Okla., Jan. 27-Feb. 1.

COHAN—J. Christopher, Dept. 580-6. "Crew Escape Techniques for Aerospace Vehicle Missions," Aeronautical Systems Div., Wright-Patterson AFB, Dayton, Ohio, Feb. 12-20. "Some Aerodynamic Problems in the Space Program," University of Notre Dame, Feb. 21.

KROPP—C. J., Dept. 592-1, with FOOR, E. R., Dept. 290-4. "Establishment of Porosity Standards for Fusion Welds," Society for Nondestructive Testing, San Antonio, Texas, Feb. 28.

WU—William L. S., Dept. 594-3. "Metabolic Approach for Prevention of Chronic Weightlessness Syndrome," San Diego Biomedical Research Inst., Childrens Hospital, San Diego, March 6.

## Births

### MAIN PLANT

COOPER—Daughter, Deborah Susanne, 4 lbs., 5 oz., born March 6 to Mr. and Mrs. Donald C. J. Cooper, Dept. 322-7. Grandfather is J. H. Cooper, Dept. 130-8. LADD—Son, David Patrick, 8 lbs., 6½ oz., born March 3 to Mr. and Mrs. W. E. Ladd, Dept. 403-3.

## Retirements

### MAIN PLANT

BECK—M. L., Dept. 733. Retired Feb. 28. Seniority date, Oct. 17, 1958.

BARRETT—Beulah S., Dept. 783-0. Retired Feb. 28. Seniority date, Sept. 28, 1950.

RAUSCH—Anthony I., Dept. 250-1. Retired Feb. 28. Seniority date, March 13, 1951.

## Deaths

### MAIN PLANT

BERNSTEIN—Philip P., Dept. 549-1. Died March 1. Survived by wife, Louise, Dept. 596-3.

OLENA—Jimmie Paul, Dept. 343. Died March 4. Survived by wife, Anna Belle.

CORIO—James, Dept. 250-1. Died March 8. Survived by wife, Florence, two children.

HARRIS—Kenneth E., Dept. 756. Died March 8. Survived by wife, Grace, two children.

MINUTO—Vincenzo, Dept. 759. Died March 2. Survived by wife, Margaret.

TARANTINO—Richard T., Dept. 101. Died March 3. Survived by wife, Margaret, two daughters.

## Personals

### MAIN PLANT

Our sincere thanks to our many GD/Astronautics friends for their gifts and expressions of sympathy upon the death of our son, Eric Alan.

Mr. and Mrs. G. O. Henningsgaard, Dept. 373-3.

We deeply appreciate the many kindnesses shown us upon the death of our mother and mother-in-law, Sarah McFarland.

Lula Mae West, Dept. 362-2  
James C. Perry, Dept. 011-2  
and families.

My deepest thanks and appreciation to the GD/Astro employees and their families who donated blood for my daughter, Theresa, who underwent open heart surgery Jan. 16, and is now making excellent recovery.

Gwen N. Loya, Dept. 101-6

Your kind expressions of sympathy on the death of my husband, Vincenzo, are deeply appreciated.

Margaret R. Minuto

## BASE 'CLEANSWEEP' PROJECT SUCCESS

(Continued from Page 1)

hand to complete the work in minimum time.

Two complexes were under work at once. Crews, operating out of trailers serving as offices and shops, worked two 10-hour shifts daily through the regular workweek. Each complex required from seven to eight days, after which operations shifted to another pair of complexes.

Work went on in sub-zero temperatures, in gale-like (40 knots) winds and despite snow and ice. Although inside work was included, some operations had to be carried out with the Atlas elevated above ground.

Responsibility for the complexes was retained by SAC, with launch personnel brought into all plans and changes.

As initially conceived, Operation Cleansweep was to include six major tasks. Ultimately, 37 tasks were performed!

In addition, teams also responded to special requests for physical and technical assistance in any problem areas and carried out special contractual and waiver requirements as needed.

Only once did Operation Cleansweep stop—during the Cuban alert!

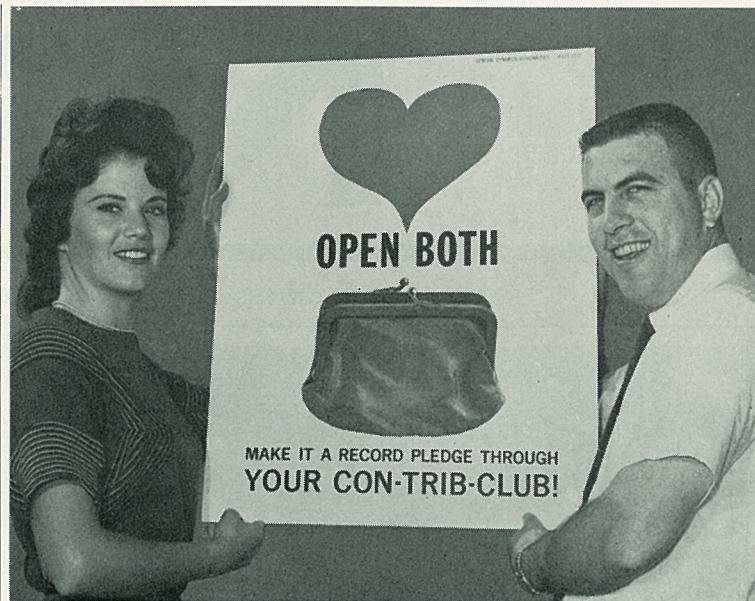
Huntsman lauded the support provided from San Diego as a major contributing factor to the operation. He also added praise for Major Hall's efforts and the cooperation of Air Force units involved.

"Our men and women accomplished this work swiftly and thoroughly," Huntsman said. "They worked under adverse conditions and often made personal sacrifices. Each is to be commended highly."

## Harrison Speaks On Hydrogen Fuel

John S. Harrison, General Dynamics/Astronautics manager of Centaur test operations, was a special speaker at an American Institute of Aeronautics and Astronautics gathering at Cocoa Beach, Fla.

Harrison, the first man to launch an Atlas missile, spoke to the group on liquid hydrogen, describing it as an exotic fuel that in the past 10 years progressed from a hazardous rocket fuel to its present state as a relatively safe propellant of great potential.



**BIG EFFORT**—Con-Trib-Club drive among Astro folk at AMR was outstanding success, finished with 95 per cent participation. Among newest members to sign up was new-hire Twyla Stapleton shown above with drive sign and Jerry Pruitt, Con-Trib-Club committee member representing engineering support.

## Action Groups Will Ride Herd On Materials

(Continued from Page 1)

one-in-three GD/Astro employees directly involved in material handling stresses:

**RESPECT**—For the items he handles. (Materials and tools used in aerospace programs are necessarily expensive.)

**KNOWLEDGE**—Of how to handle an item—before he handles it. (Although they may become part of mighty missile and space systems, individual components may be extremely delicate.)

**RESPONSIBILITY**—For effective material handling, regardless of his work assignment.

To improve communications on material handling subjects, and to provide strategically located action groups for parts and material handling problems, the working group has moved to establish Action Task Groups.

These are seen as four to six-man committees (Task Groups) to operate at Plant 71 (Bldg. 5, Bldg. 33, and Bldg. 4), at the materials building (92), and at Plant 19 (formerly GD/Convair Plant 2).

Task Group guidance will be supplied by a steering committee, which will act as a clearing house and review reports of accomplishments.

Task Groups will be charged with assuring continued improvement of parts and material handling and packaging techniques throughout GD/Astro operations.

## Road Widening Slows Traffic

General Dynamics/Astronautics employees using Kearny Villa Road between Aero Drive and the main plant may experience some delay while the road is being widened in coming weeks.

While construction is in progress, traffic will be restricted to one lane in each direction (a total of two lanes, instead of the previous three).

Work scheduled for completion within three months, will result in a four-lane road with center dividing strip.

Also involved is some slight widening near the two southern access roads to GD/Astro parking lots, and a diagonal cut across Kearny Villa Road near the southwest corner of plant property due to sewer modifications.

City traffic engineers have appealed to employees to exercise added care—and patience—as work goes on, promising increased convenience upon its completion.

Of significance to employees commuting from beach areas is completion of the Balboa extension to Highway 395, slated late this month.

The extension consists of two divided lanes, with subdividers to add an additional lane in each direction as the area is developed.

## Top Students Seek Grants

Outstanding students. Top scholastic records. Record numbers.

These were key factors entering what is proving to be an extra tough proposition—selecting finalists for scholarships being presented this year by General Dynamics/Astronautics Management Club.

Over the past weekend 31 semifinalists from an initial field of 770 candidates appeared at Astro for tests, essays and a plant tour. From their numbers eight are being selected to appear before a panel of outside judges on April 10.

One winner from this group will be awarded an \$800 scholarship; one a \$400 scholarship; and two \$100 scholarships.

"Parents of our candidates are to be congratulated for some remarkable youngsters," said Keith Blair, scholarship committee chairman. "We have had a tough job in eliminating contestants, because each had an outstanding record."

Candidates for scholarships this year represented 27 schools in the area with some showing the highest possible grade point average.

## Astro Men Honored For Work on Port

Two General Dynamics/Astronautics men were among those honored during a "victory dinner" marking establishment of the San Diego Unified Port District recently staged by the Industrial Development Council.

Receiving "keys to the city" for their work were Sidney Albert and Robert J. McPherson. Albert is chairman of the board for the Council, while McPherson is a board member.

## Decision Simulating Course Offered

Under auspices of Astronautics Management Club, a new course in "decision simulating" opened last week. It will meet weekly for eight weeks and is open to all employees without charge.

Sessions are held from 5 to 7 p.m. each Wednesday in Room 15, Bldg. 33, at Plant 71. No advance registration is necessary, although information is available through Walter Bastain, ext. 6611, Plant 1.

## Students Tour Astro On Automation Study

A group of 20 San Diego City College students studying industrial automation visited General Dynamics/Astronautics late last month.

Host for the tour was W. A. McNeely, process control (Dept. 141-2).

Students toured the low-bay factory area, and observed numerically controlled production machinery in operation.

## Save Materials—Don't Throw Your Job Away

## Parking Lots To Be Closed For Overhaul

Preventive maintenance being performed on Plant 71 parking lots at General Dynamics/Astronautics on Saturdays and Sundays will continue throughout this month and April.

This means that one or more lots will be closed to parking on consecutive weekends while the two-step operation is in progress.

Step one involves a thorough cleaning of the lot surface followed by an application of a sealing oil spray and a layer of sand. This requires one weekend. The following weekend sand is removed and the lot restriped.

Unless these maintenance steps are taken periodically, there is a possibility that water seeping through holes and cracks will undermine large area, necessitating major repairs.

Over the coming weekend (March 23-24) the two lots at the northwest corner of the reservation along the north access road will be restriped. At the same time south parking lots immediately behind (south) Bldgs. 4 and 5 will be resealed. Then on March 30-31 the south lots will be restriped while the entire lot immediately west of Bldg. 26 will be resealed.

Employees can do two things to help speed the program along. First, observe the "no parking" signs posted throughout the week preceding this work on Saturdays and Sunday. Cars parked in areas to be worked must be moved. And during the week when sand coverings blot out parking spaces, make an extra effort to park in a straight and orderly fashion.

Plant engineering promises one "dividend" from this work—new parking spaces are being added in every lot whenever possible.

At present Astronautics has more than 8,000 spaces around Plant 71.

## Briefing Held On Centaur

Seventy key space program scientists and managers from throughout the nation last week attended a three-day familiarization course in the Centaur high-energy space vehicle at General Dynamics/Astronautics.

Attending were representatives of National Aeronautics and Space Administration (NASA) centers in Washington, D. C.; Cleveland, Ohio; Houston, Texas; Greenbelt, Md.; and Los Angeles; as well as representatives of the Air Force and members of the contractor team involved with the Surveyor program.

The course covered such areas as Centaur design and performance, the vehicle's systems, its mission capabilities, and the relatively new liquid hydrogen technology involved.

Grant L. Hansen, vice president and Centaur program director, served as host.

## Film on Reliability Earns Praise Abroad

Praise for a General Dynamics/Astronautics produced film, "Locked On," has been received from the Rolls-Royce, Ltd., firm of Derby, England, following recent showings there.

The letter from England pointed out that audiences in that area were enthusiastic about the film which shows the role of the individual in attaining product reliability.

## Jake Davant Named To 'Make, Buy' Post

Appointment of J. K. Davant as assistant to G. A. Grossaint, General Dynamics/Astronautics manager of production engineering, has been announced by E. D. Bryant, vice president-operations.

In his new assignment, Davant will be responsible for coordination of GD/Astro "make" or "buy" activities.

## General Dynamics NEWS

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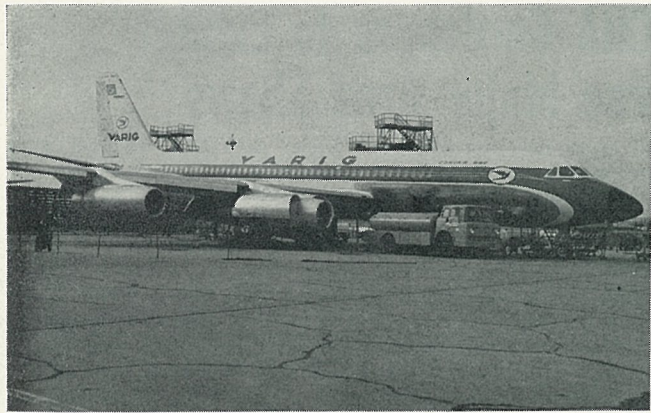
GD/Electronics (San Diego) news contact: Betty Freeby, 298-4641, ext. 1377, Plant 1, Bldg. 51.

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**APRIL FLY-AWAYS**—At left, Varig of Brazil's first 990A shows bright blue emblems of South American airline as it is readied for delivery in next few weeks while, at right, third 880-M for Viasa, Venezuelan airline, rolls out of final assem-

bly. Plane bears KLM markings on opposite side. In center is group of Viasa and Cathay Pacific Airways flight crews at GD/Convair for production flight training on 880-M systems and in cockpit procedures trainer.

## Fall Delivery Slated For Garuda 990A Jets

R. F. Conley, General Dynamics director of commercial sales, returned from the Republic of Indonesia this month following successful arrangements for delivering three Convair 990A jet airliners for use by Garuda Indonesian Airways.

Deliveries are expected to start this fall and training of Garuda flight and maintenance crews is scheduled for midsummer at San Diego.

Top level discussions extended over an eight-week period during January and February which culminated in approval by President Sukarno at Djakarta, Indonesian capital.

"The 990As will be used on Garuda's international routes which serve Singapore, Bangkok, Hong Kong, Manila and Tokyo," Conley reported. "They will make possible route expansion which Garuda has under consideration."

The Convairs, which will have all the top performance features which make them the world's fastest passenger transport, will replace turboprop Electras, making the latter available for use on the high density domestic routes.

"The domestic air market is a big one in Indonesia," Conley reported. "Remember, this country includes some 5,000 islands with a total population of 100 million (the fifth largest national population in the world, preceded only by China, India, the USSR and the U.S.) and it is 3,000 miles from one end of the nation to the other.

"It is potentially a rich nation, too, ranking third in natural resources."

Conley was assisted during conferences by August Dasaad of

Dasaad Musin Concern, Djakarta, General Dynamics representatives in Indonesia. He said that language was no problem during the discussions, as all of the top level government officials speak excellent English.

Expected to visit San Diego soon for conferences are Capt. Partono, president of Garuda, and Dr. Yap Kie Tik, airline technical director. They come with a long background of experience with Convair airplanes. For years they have operated all three of the Convair-Liner versions, 240, 340 and 440 (General Dynamics NEWS, Jan. 9, 1963) as part of the Garuda fleet.

## SHARE Group Sees Systems Operating At GD/E Facility

More than 200 "SHARE" delegates saw a demonstration of computer output equipment, designed and manufactured by General Dynamics/Electronics at San Diego, while attending a coast conference in February. (SHARE refers to users of IBM 704 and 7090 computer systems.)

Buses transported computer experts from the El Cortez Hotel meeting place to GD/Electronics Plant 2, 1895 Hancock St., on the evening of Feb. 27. There they watched the S-C 4020 Computer Recorder, S-C 3070 Electronic Printer, and the S-C 1090 Display Console in operation.

Delegates represented companies in the United States, France, Germany, and Italy.

## Four Airlines To Get Jets During April

Six Convair 990A and 880-M jet transports will be leaving the San Diego flight line of General Dynamics/Convair during the next month as they go to four foreign and domestic airlines.

Varig Airlines of Brazil will take delivery of three Convair 990As during April.

Ruben Berta, president of Varig, said the 990A exceeded all requirements during recent demonstration flights over the carrier's routes and that Varig wanted to put the planes in service as soon as possible.

Varig's 990As will first go into service between Buenos Aires and Los Angeles, with stops at Sao Paulo, Rio de Janeiro, Lima, Bogota, and Mexico City. Later, the planes also will be used between Buenos Aires and Miami, Fla.

Viasa of Venezuela will receive another 880-M, its third, some time after mid-April to expand its all-Convair transport fleet. It placed its first 880-M into service the summer of 1961. Viasa also has recently acquired two more Convair 340s and an additional 440 to give it a fleet of 10 Convair twin-engine and jet airliners.

Second of Japan Air Lines' follow-on order of three 880-Ms was due for March delivery. The third will go to the Tokyo-based airline later this summer. Its initial order of five 880-Ms was completed last fall.

American Airlines will take delivery on its fifth and last 990A by the end of this month. It placed the first of its fleet of 15 of the basic 990 version into service over continental passenger route just a year ago, March of 1962.

## SAVE Meeting Will Be in NYC

Top Department of Defense officials will address the Society of American Value Engineers (SAVE) 1963 convention April 25-26 in New York City, with General Dynamics men filling key program roles.

Both E. D. Heller, manager of value engineering at GD/Astronautics, and B. P. Schroeder of GD/Pomona, are members of the conference committee. Heller is SAVE national secretary.

Kick-off speaker at a conference session on administration will be Marion Hicks, vice president-legal and procurement, GD/Fort Worth.

Schroeder will serve on a panel "Problems of Value Engineering Education," while Heller will present a paper "Value Engineering and Cost Target Programs."

Guest speakers include Thomas Morris, Assistant Secretary of Defense; G. Fouch, Deputy Assistant Secretary of Defense; Barry Shillito, president, Logistic Management Institute; and Anthony R. Tocco, SAVE president.

Additional information and conference reservation forms are available from Heller at GD/Astro ext. 2467; B. W. Kahla (president, San Diego SAVE chapter), GD/Convair ext. 2325; and M. M. Reeder, GD/Electronics ext. 1136, San Diego.

## Scientists and Quality Experts Will Attend Reliability Panel

Key scientists and quality control experts from each of the divisions will attend the General Dynamics Corporation Panel on Reliability at GD/Fort Worth April 1, 2, and 3.

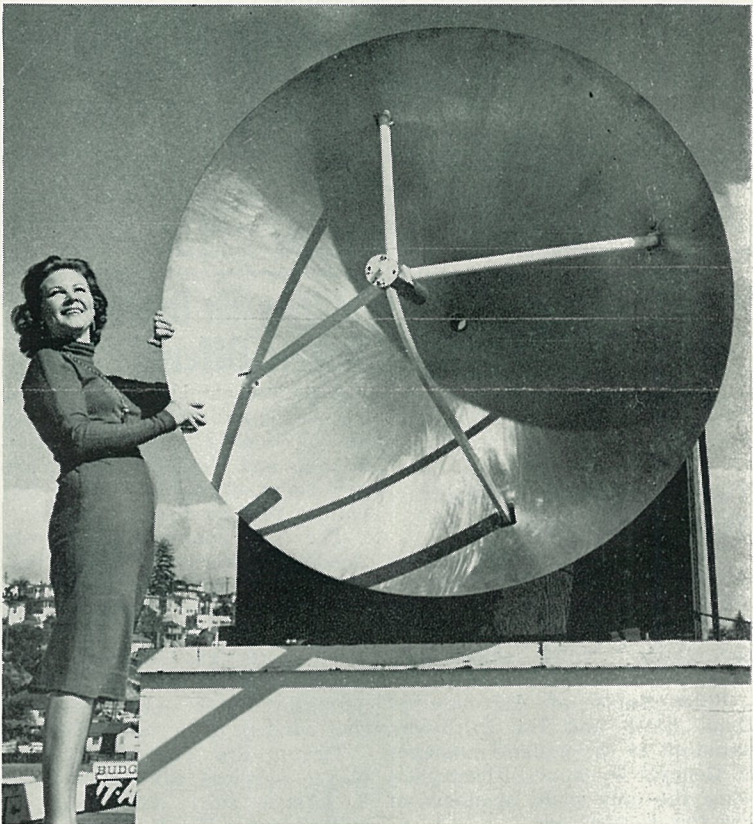
Panel officers include: J. Y. McClure, GD corporate director of reliability and quality control, permanent panel chairman; E. J. Behney, Electric Boat manager of quality control, chairman of the quality control panel; and T. W. Dunn, Electric Boat assistant general manager for reliability, chairman of the reliability technical panel.

On April 3, the group will divide into separate panels to dis-

cuss mutual problems in reliability, technical and quality control areas.

The panel was established in 1959 and serves as a focal point for the corporation's consideration of reliability and quality control.

"The panel stimulates action within the corporation and the divisions to further the development, organization and coordination of reliability and quality control reports with the corporation and its divisions to solve our mutual problems," said E. R. Weiher, GD/Fort Worth manager of quality control.



**PRETTY DISH**—Two attractively streamlined 5-ft. dishes pair off as Martha Schweiger (Astro Dept. 322-8) adds glamour to the scenery alongside GLOTRAC antenna reflector dish undergoing checkout on Bldg. 51, Plant 1, antenna range. GD/Convair fabricates dishes for Astro-developed high-precision space vehicle tracking system.



**IT'S A DEAL**—In top photo, R. F. Conley, General Dynamics director of commercial sales, shakes hands with President Sukarno of Indonesia during 990A jet discussions. Below, clockwise from left, are August Dasaad, Dynamics sales representative, Chirul Saleh, Indonesia minister of basic resources, Conley, R. Iskandar, minister of air communication, Dr. Sumarno, governor of the Bank of Indonesia.



"... I had another nightmare last night ... just as it came time for the coffee break, the bomb shelter siren went off."





**HIGH STEPPERS**—Square dance commissioners and their wives from three General Dynamics divisions, Mr. and Mrs. Maury Scholz of GD/Convair; Mr. and Mrs. Lloyd Scarborough, GD/Pomona; Mr. and Mrs. Marty Stutz, GD/Astro, hold reunion at annual all-General Dynamics Hoedown hosted by PRA group March 2 at Pomona. GD/Pomona's Convairity Steppers observed 10th anniversary at event.

## Astro Son Wins Soaring Trophy

An Astro son was the only General Dynamics sailplane pilot to win a trophy in annual Pacific Coast Mid-Winter Soaring Championships held at Torrey Pines glider site March 9 and 10.

Keith Allen, 17-year-old son of Astro's Fred Allen, rolled his glider within four inches of the chalk target to win the spot landing event. He also won Junior Trophy for overall performance of young competitors.

Sterling Starr of Astro was third in overall standings for the top John J. Montgomery Trophy.

Twenty-eight glider pilots, many from General Dynamics divisions, competed in the soaring championships. Walt Mooney of General Atomic, was meet chairman, and Jim Spurgeon of GD/Convair, master of ceremonies.

## Two Dynamics Men Star at Playhouse

Two General Dynamics men in the San Diego area were featured players in the Coronado Playhouse production of "The American Dame" which closed last week.

Peter Smith of Astronautics, Dept. 641-3 and Ira D. Sykes, assistant to the general manager of General Dynamics/Electronics, were the only male members of the five-person cast.

## Veterans Recall Fighting of 18 Years Ago During Bloody Invasion of Iwo Jima

Feb. 21 was more than just another date on the calendar to two General Dynamics/Convair men.

Every year on that day Al Zamora, hospital departmental assistant, and Bob Koser of motion picture lab meet for at least a few minutes to renew their memories of the fateful Feb. 21 night, 18 years ago, when both took part in the bloody Iwo Jima invasion.

Koser was grinding out shots of the battle from the decks of the Saginaw Bay as combat mo-

## 13-Year-Old Rescues Boy in Swim Pool

Crystal Wellington, 13, was an interested "student" swimmer last summer when her mother taught her some routine life saving holds. And it paid off recently when she was credited with saving a two-year-old.

Crystal is the daughter of Lorena Wellington of GD/Astro's Dept. 144-2.

She was playing near her home when a young boy rode his tricycle into the deep end of a neighbor's swimming pool. Crystal plunged in fully clothed and rescued the wet, but unharmed, youngster.

## 'Mutiny on Bounty' Tickets Offered

A limited number of tickets for a special performance of "Mutiny on the Bounty" starring Marlon Brando and Trevor Howard, are now being offered to General Dynamics folk at discount prices.

The film, nominated for seven Academy Awards including "best picture of the year," will be shown at Capri Theater, 3812 Park Blvd., at 2 p.m., April 7.

All seats are reserved, with loge tickets at \$2 and general admission \$1.60—both 20 per cent savings of normal prices.

Tickets are available at employee services offices in Bldg. 8 (Astro site) and Bldg. 32 (GD/Convair Plant 1).

## Toastmasters Club To Enter Speakers In Area Contests

Ray Sodomka and Bob Byron will represent Dynamic Toastmasters Club #457 in area speech contests to be held Friday (March 22) at Kings Inn, Mission Valley.

Byron will speak in the serious category, while Sodomka competes in the contest's humor classification.

The event, coordinated by Ed Wynn of the Dynamic group, will open at 7:30 p.m. Dinner is \$3.50 per person.

At a March 7 meeting at Pernicano's, the club named Sodomka its new president, with Wynn, administrative vice president, and Irv Van Horn Jr., education vice president.

Other officers include Ken Jamrus, treasurer; Roy Kalanquin, treasurer; and Ernie Kling, sergeant at arms. All are GD/Astro employees.

The group is open to all General Dynamics men in the San Diego area, and meets each Thursday at 6 p.m. in Convair executive dining room, Pacific Hwy.

Management Clubs at both GD/Astro and GD/Convair encourage their members' participation by defraying a portion of Toastmasters fees.

## Management Club Zone 'A' Bowlers Roll March 23-24

Both individual and team entries will be accepted through tomorrow (March 21) for the Management Club Zone "A" bowling tournament to be held March 23-24 at Clairemont Bowl.

The tourney is open to management clubs throughout the Arizona and Southern California area, and is being hosted by the GD/Astronautics club.

Fee is \$20 per team.

Entries will be accepted by F. L. Erwin, ext. 3509, or Harry Lund, ext. 2601, both at the Astro site.

## GD/E's Monty Walker Earns P.T.A. Honors

Monty Walker of GD/Electronics Dept. 11-00 has been recognized for her years of service with boys' groups in the Fletcher Hills area by a life membership in the Fletcher Hills Elementary Parent-Teachers Association.

Mrs. Walker and her husband have devoted all their spare time the last eight years, while their sons have been growing up, to such activities as Little League and Pony League, Pop Warner football, Cub and Boy Scouts.

Mrs. Walker joined GD/Convair 11 years ago in plant engineering and transferred to GD/Electronics last summer in contracts.

## ARA-CRA Gardeners to Exhibit In Three Major Area Shows

General Dynamics gardeners have a busy month ahead as they groom prize flowers for three important shows in the San Diego area.

They are heading toward their own joint ARA-CRA annual Rose Show on Sunday, April 21, open to all General Dynamics people. Many intend to exhibit in the 17th annual orchid show sponsored by the San Diego County Orchid Society April 5-7 in Balboa Park's Conference Bldg. ARA Commissioner Everett Henderson is show chairman.

And, others of the garden groups will be displaying in the San Diego County Rose Society's show April 13-14.

ARA and CRA Garden Club members will meet in joint session April 3, 7:30 p.m., at the Floral Association Bldg., Balboa Park, to finalize plans for the annual Rose Show, said Henderson and CRA Commissioner Gene Zimmerman. Dahlia tubers will be available to interested members for the second time.

## Style Show Features Dynamics People

Four General Dynamics/Astronautics employees will be featured April 3 when the San Diego Industrial Recreation Council (IRC) stages its "Profiles in Fashion" event at El Cortez Hotel's Caribbean Room.

Ray Mendoza of Astro, president of IRC, will serve as master of ceremonies and will appear as a singer during the entertainment portion of the show.

Darlene Elson and Jan Grier will be female models and Ludy Moeller, a male model during presentations of the latest in spring fashions.

Tickets, signifying a \$1.25 donation, are now available through Astro's employee services office, Plant 71, and Convair employee services, Bldg. 32, Plant 1. The affair starts at 8 p.m.



**GOLD AWARDS**—Gold pins commemorating 150th launch of an Atlas were presented to launch control officers and Astro test conductors who have launched missiles. At PMR Director Kenneth E. Newton, center, presents pin to Capt. John Davis, 576th SMS, while Richard A. Clark, Astro's chief test conductor and a pin recipient looks on.

## Gold and Silver Pins Awarded Commemorating 150th Launch

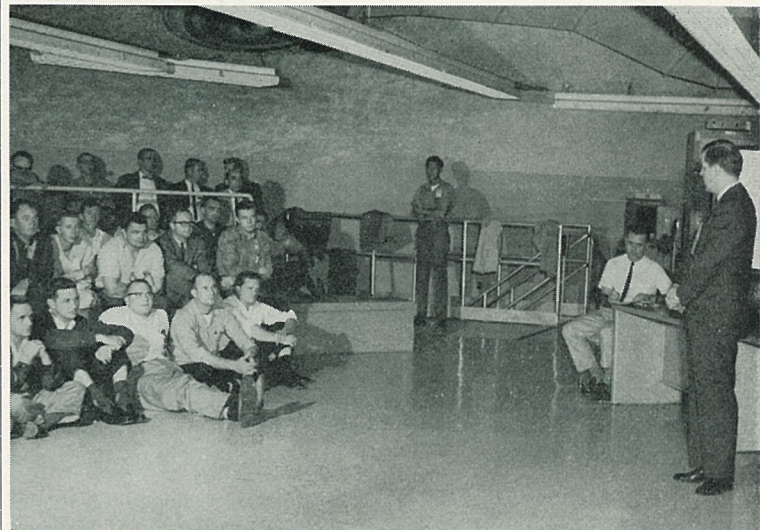
VANDENBERG AFB—Special observances, complete with presentations of unique pins were held here recently commemorating the 150th launch of an Atlas missile.

General Dynamics/Astronautics arranged to have pins prepared. Gold-finished pins went to Air Force launch control officers and Astronautics test conductors who have actually launched an Atlas

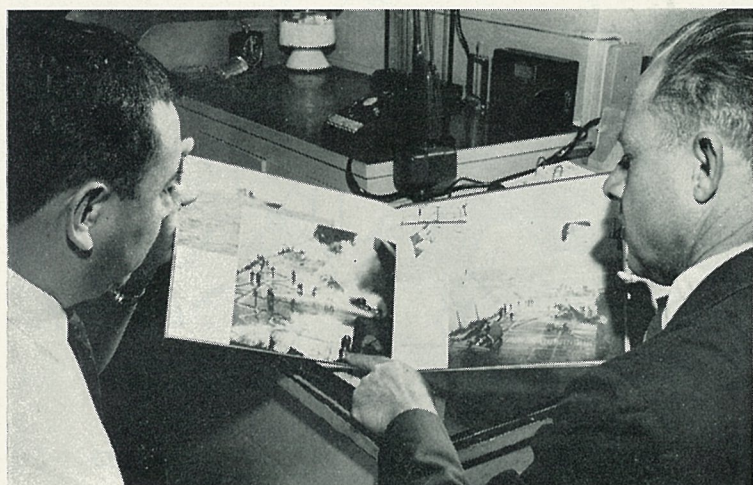
during the program. Silver-finished pins went to those who have contributed outstanding efforts to launches.

Here at Vandenberg 20 gold pins and 20 silver pins were distributed during a special dinner at Vandenberg Officer's Club.

Complex 576-B here has actually accounted for 25 of the first 150 Atlas launches.



**LATEST WORD**—Grant L. Hansen, right, GD/Astro vice president and program director—Centaur, is shown in Complex 36 blockhouse at Cape Canaveral bringing crews there up to date on current Centaur developments. Hansen discussed Centaur with several AMR groups.



**MEMORIES**—Al Zamora and Bob Koser, both GD/Convair, review battle shots taken 18 years ago when both took part in fateful Iwo Jima landing, Feb. 21, 1945.



# Sports & Recreation

## ARA Bridge Club Will Sponsor Area Play in National Tourney

ARA Bridge Club will sponsor local play in the first National Industrial Recreation Association (NIRA) contract bridge tournament to be held next month throughout the U.S. and Canada.

The GD/Astro session, slated for 7:30 p.m., April 27 in ARA Clubhouse, will be one of some 600 area tournaments played simultaneously.

Participants will play 18 "par" hands prepared by William Root, card authority for the Association of American Playing Card Manufacturers, and Larry Rossler, runner-up in the recent World Olympiad par tournament, who will also serve as judges.

Winning pair, nationally, will receive a week-long, jet vacation in London and Paris, and will retain possession of the Charles H. Goren Cup for one year.

Eight regional winners will receive Samsonite bridge tables and chairs, while all local game winners will receive citations.

All GD/Astro employees, retired employees, and members of their immediate families are eligible to enter. Proceeds from \$1 per person entry fees will be

used for a NIRA scholarship.

Prospective participants may obtain additional information and entry blanks by contacting ARA Commissioner Art Saastad, ext. 3012 at the main plant. Entry deadline is April 1.

## NMA TO SPONSOR DESERT TOURNEY

Reservations are now being accepted from Astronautics Management Club members desiring to take part in the annual National Management Association Golf Tournament.

The 36-hole medal play event will be held May 4 and 5 at Palm Springs over the La Quinta and Indian Wells Country Club courses.

Entry fee is \$23 and includes greens fees for both days, electric carts (required), trophies and refreshments during play. Lockheed is host.

Art King at exts. 3911 or 4093 will book reservations and supply information.

Tentative plans are also being formulated for the booking of a motel in the area to house GD/Astronautics, Convair and Pomona golfers interested. King will supply information on this possibility.

## New Filing Adopted For Group Claims

A new filing procedure for group insurance claims went into effect last week at General Dynamics/Astronautics.

Involved are all employee and dependent claims for non-occupational illness or accidents.

Two steps are involved. Employees complete a regular claim form and turn it in at employee services offices. He or she is then given a physician's certificate and a self-addressed envelope. Employees may mail or deliver the certificate to their physician for completion.

Speedier processing is anticipated through this system by eliminating one clerical step at Astro and the employee is sure when the certificate was turned over to the physician.

## Coin Club Will Elect At Both Unit Meets

Both first and second shift units of ARA Coin Club will conduct election of officers when they meet at ARA Clubhouse today (March 20) at 7:30 p.m. (first shift) and at 1:15 a.m., March 21 (second shift).

Coiners, the first shift group, will conduct judging to determine its "Award of the Year" recipient. All trophy-winning displays throughout 1962 will vie for the honor.

A coin auction will be held and those attending will receive a free, uncirculated 1944-P cent.

For the second shift, a short movie will be shown, and a display competition and swap session are planned.

## Entries To Be Taken For IRC Tournament

Entries for San Diego Industrial Recreation Council (IRC) 1963 golf tournament will be accepted April 1-22 at all GD/Astro employee services outlets.

Play is scheduled May 4, 5, 11 and 12 at Torrey Pines and Balboa Park courses.

Eligible to enter is any GD/Astro employee with an established handicap from four ARA-sponsored tournaments conducted since the 1962 IRC event.



**WELL EQUIPPED**—Part of Hi-Fi/Music Club equipment is demonstrated by Larry Zemlin, club vice president, left, who adjusts stereo tape recorder while Bob Ross, studio chairman, prepares to "cue" record on turntable. Club's studio console contains two 4-track tape recorders, twin turntables.

## Hi-Fi Talk

### Club Courts 'Woofers, Tweeters, Cross-Overs,' Shuns 'Rumbles'

Audiophiles are crazy about "woofers" and "tweeters"; the thought of a "rumble" is as upsetting to them as to a big-city policeman; and "cross-overs" have an appeal which would put a traffic engineer to shame.

GD/Astronautics employees and their families who participate in activities of ARA Hi-Fi/Music Club soon become familiar with all those terms—and hear plenty of good music besides!

In business less than a year, the Hi-Fi Club now operates a host of activities, most of which center about its elaborate studio in ARA Clubhouse.

In a custom console at one end of the room are two stereo tape recorders, a turntable plus an automatic changer for records, FM and FM-Multiplex tuners, and the battery of electronic equipments necessary to feed music to stereo earphones, monitor speakers on the console, the clubhouse auditorium, or to the huge, matched "concert" speakers in the studio itself.

A full list of the equipment with its technical specifications is cumbersome, but it constitutes every hi-fi enthusiast's dream of the "ideal rig."

Even the studio listening area is a "custom installation." The floor is carpeted; the ceiling is acoustic tile; the walls are mahogany-paneled with built-in baffles to make the room acoustically "dead."

"We use the same volume settings to fill the auditorium with sound as we use in the listening area," said Commissioner Ben Lachance. "This enables us to listen comfortably in the studio, yet play at a level to achieve maximum fidelity."

The club meets for a business session on the second Tuesday

## Al Schindler Shades Pistol Commissioner

Al Schindler, joining ARA Pistol Club after a three-year assignment at Warren AFB, made his presence felt by downing ARA Commissioner Gordon McPherson, 286-278 in master class of a .45 Short National match.

The contest was one of two matches fired at the club shoot March 10 at San Diego Police Pistol Range.

Other winners were Bill Jungk over Angim Carlson, 234-215 in expert class, and Bill Worthington over Bob Kaufman, 212-105 in the marksman bracket.

McPherson rallied to win master class in .22 Camp Perry match, topping Knute Knutson, 294-292.

In this fray, Harry Black led Warren Ranscht, 281-278 in expert class; John Bennett downed Les Vivian, 271-269 among the sharpshooters, and Art Lewis fired 246 to best Rod Eschenburg's 223 in marksman category.

and fourth Wednesday of each month. In addition it schedules regular Friday concerts—recorded or live—in the studio.

Most events are free. To others, a modest donation is asked.

"Concerts range from string quartets to jazz," Lachance said.

The club offers something for everyone—whether listener or technician.

"We will instruct employees in use of the equipment so they can make their own tape-to-tape or record-to-tape transcriptions," Lachance explained.

"And we offer advice and assistance to those who wish to build their own hi-fi equipment from kits, and the use of our extensive array of test equipment for repair or trouble-shooting."

A special club workshop will be ready for use in the near future.

"It's easy to get in on the fun," Lachance added. "Come to one of our concerts, or to a business meeting. Any GD/Astro employee or dependent will receive a warm welcome."

## Four Bowling Commissioners Divide ARA Responsibilities

Astronautics Recreation Association's largest participant activity—bowling—has announced summer league plans and a new system of administering activities.

To better serve the many ARA-sponsored leagues, four commissioners of bowling have been named. They replace Jack Boyle who has left the company.

Forest Erwin is now commissioner for all ARA teams taking part in outside leagues. He is commissioner of representative bowling.

Bob Crafton is commissioner of leagues currently operating or planned for areas in northern San Diego County (Poway, Escondido, etc.).

Tony Minniti is commissioner for metropolitan San Diego (Frontier, Clairemont, etc.).

Bryan Weickersheimmer is commissioner for eastern county areas (Parkway of El Cajon, La Mesa, etc.).

Each commissioner may name one or more bowling directors to assist. Commissioners and directors will meet periodically to iron out problem areas and to insure all ARA-sponsored bowling leagues conform and operate alike.

All ARA-sponsored summer leagues will open the week beginning May 12 and continue through Aug. 16.

Only one league will operate in the northern area. This will be a Wednesday (7 p.m.) mixed trio at Poway Bowl. Application blanks for this league are available at Poway Bowl.

In the eastern area a 700 mixed handicap league will meet at

## Second Section Added to Bridge

Growing attendance made possible two sections of play in ARA Bridge Club's monthly Master Point event, March 8 in ARA Clubhouse.

North-south winners in section "A" were Mr. and Mrs. W. B. Grindstaff, with Glen Thomas and John Fritz taking east-west honors. In section "B," Mary Saastad and Ann Stephens were north-south winners, with Janet Hogan and Francys Darr, east-west.

Attendance at Bridge Club's regular Friday play nights (18 to 20 tables per night) has made it possible to award 32 ACBL fractional Master Point prizes each week.

Full Master Point awards are scheduled for both April 5 and 12, with play beginning at 7:30 p.m.

"We have plenty of space for anyone who wishes to play," said ARA Commissioner Art Saastad.

Saastad may be contacted at ext. 3012 for further information about the club.

## Rugby Team Gaining More Experience

Although no games have yet been tallied on the "win" side of the ledger, ARA's rugby team has given good account of itself in stiff Southern California Rugby Union play since organizing late last year.

Recent games have been yielded only after stubborn battles against South Coast Rugby Club (Santa Ana), and Universities Club of Los Angeles.

In the latter game, Steve Krueger scored a first-quarter touchdown and Larry Blackburn, the team's captain-coach, added field goals.

Blackburn is the only member with previous experience. However, the team has come to rely on skillful punting from Ben Martinez, fullback, and top performances from linemen Gerry Keating and Frank Echevarria, and halfbacks Jim Milton and Garfield Winters.

Prospective players have been asked to contact Blackburn, ext. 4254 at Plant 71, for more information about the game.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**BOWLING**—Summer league applications now available at employee services outlets.

**BRIDGE**—Play nights, Fridays, 7:30 p.m., ARA Clubhouse. Full Master Point night, April 5.

**DISCOUNT TICKETS**—"Mutiny on the Bounty," 2 p.m., April 7, Capri Theater. Tickets \$2 (loge), \$1.60 general admission, at employee services office, Bldg. 8.

**GOLF**—Entries for IRC tournament accepted April 1-22, employee services outlets. Play, May 4, 5, 11, and 12, Torrey Pines and Balboa Park. Fee \$1.50.

**GUITAR RECITAL**—Roberto Torrez, classical guitar, March 27, 7:30 p.m., Hi-Fi Studio, ARA Clubhouse. Donation 50¢.

**ICE SKATING**—Thursdays, 6:30 p.m., Mission Valley Ice Plaza.

**IRC FASHION SHOW**—"Profiles in Fashion," 8 p.m., April 3, El Cortez Hotel. Tickets \$1.25 at employee services office.

**PHYSICAL FITNESS**—Women's classes 5-6 p.m., Tuesdays, ARA Clubhouse. Register with Joyce, ext. 1111.

**SAILING**—Employee discounts on boat rentals at Vacation Village, Mission Bay.

**SOFTBALL**—Organizational meeting of captains or managers, 5:15 p.m., March 29, ARA Clubhouse. Plant league opens April 15.

**TEEN CLUB**—No dance April 6. Next club event, April 20.

## ARA May Sponsor Electronics Club

A Solid State Electronics Club has been proposed for ARA sponsorship, with an organizational meeting slated for 7:30 p.m., April 2 in meeting room "A," ARA Clubhouse.

Basic club objectives are to provide members with use of test equipment, facilities and materials to study applications of solid state devices: transistors, diodes, etc.

All interested GD/Astro employees have been invited to attend the meeting.

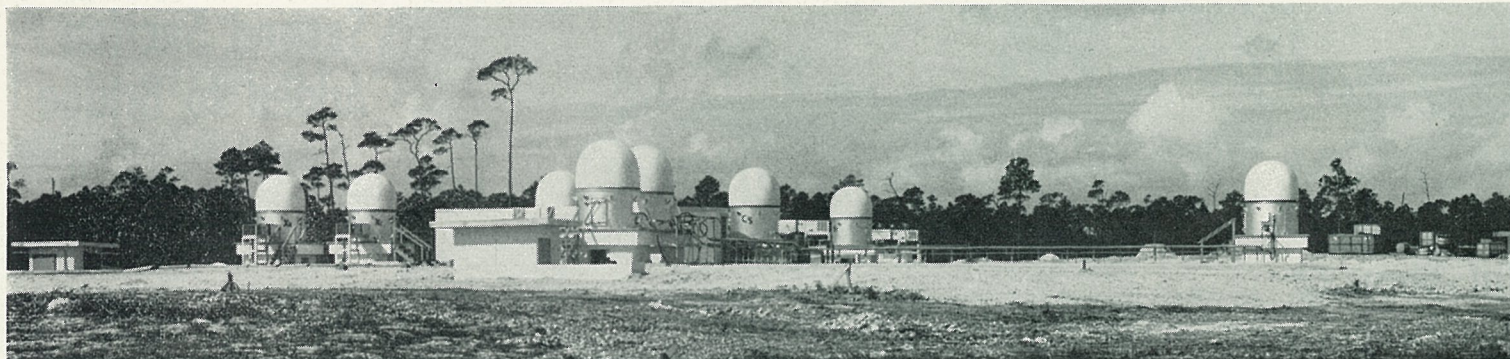
## Teams Will Organize For 1963 Softball

An organizational meeting at 5:15 p.m., March 29, in ARA Clubhouse will kick off the 1963 plant softball season at GD/Astronautics.

All team managers and captains planning softball entries have been asked to attend. League play has been tentatively scheduled to start April 15.

Additional information is available from Rich John, ARA headquarters, ext. 1111.





NEW HOME — Forest provides backdrop for eight antenna domes of Azusa Mark I tracking system installed at new site on Grand Bahama Island. System was moved by GD/Astro from

Cape Canaveral for nearly 10 per cent less than original contract price. Move, under GD/Astro team, began in fall of 1961 with disassembling of system at Cape.

## Wise Transfers To EB Division

W. E. Wise, manager of industrial engineering at GD/Convair, has transferred to GD/Electric Boat division in Groton, Conn., as manager of management engineering, a new post.

Wise, a native of Colorado, joined GD/Convair engineering department in 1950 and has held responsible positions as test lab group engineer, chief of applied manufacturing research, chief industrial engineer. He was appointed manager of resources engineering early last year.

W. R. Bruce, GD/Convair director of operations, in making the announcement of Wise's transfer, said industrial engineering activities have been realigned.

R. C. Hartwig, chief of systems and procedures and data processing, and Vern Sharp, chief of plant engineering, now report directly to Bruce.

R. D. Marks, chief of methods and applied manufacturing research, reports to Sharp.

## HORNE IN WASHINGTON FOR ANNIVERSARY

C. F. Horne, General Dynamics/Pomona president, was in Washington, D.C., during early March to attend 50th anniversary celebration of the formation of U.S. Department of Labor. Horne attended as president of the EIA.

## Azusa Mark I Shifted to GBI As Mark II Installed at Cape

Final figures are now in from a "king sized" moving operation begun more than a year ago by General Dynamics/Astronautics.

This was the shift of GD/Astro's Azusa Mark missile tracking system from Cape Canaveral to Grand Bahama Island, British West Indies.

The move was accomplished for nearly 10 per cent less than contract price. And, to this can be added savings of several million dollars: Mark I was moved and updated for about one-fourth the cost of a new system!

Air Force decision to move Mark I to GBI was motivated by two factors.

First, an improved Azusa Mark II tracking system was already installed and operating at Cape Canaveral.

Second, a need was seen for a backup system down the Atlantic Missile Range which could assure continuous flight path, trajectory and position information.

(Solid propellant rockets leave an exhaust residue which can obscure radio signals from a system directly behind the missile. A secondary tracking system at a different angle to the flight path overcomes this obstacle.)

In late October 1961, a GD/Astronautics team began disassembling Mark I for the move

under direction of D. C. Prim, now manager of trajectory measurement and control; T. H. Scholder, assistant GLOTRAC program director; L. F. Bell, assistant GLOTRAC project director; and H. L. Copeland, chief of ground tracking.

Transported by ship and aircraft to a two-acre site near Freeport, GBI, the system was reassembled and modified to improve its performance.

Unit leaders for the move were GD/Astro's H. A. Vasques, J. A. Moody, G. W. Moses and W. D. Buniger, while others involved in the project included D. D. Greenwood, M. Huff, M. Martinez, J. J. Heilman, S. R. Zanin, A. R. Evans and L. A. Allen.

Technicians H. B. Jenkins, Gene Swindel, C. G. Skeen and C. F. Borchert also played key roles.

Other members of the GD/Astro team were R. A. Harwood, T. B. Field, J. H. Getz, E. O. Campbell and E. F. Knettle, working under G. T. Herring, now chief of mechanical packaging design, who handled the engineering drawing and release function.

System integration and design, under N. L. Lawhead, chief, concentrated on theoretical analysis and overall system design, with engineers including L. G. Karel, E. J. Matson, V. J. Poehls, C. H. Burnes, J. D. Knoner and P. D. Adams, participating.

The late C. W. Kushera was off-site coordinator for the Azusa Mark I move.

## Special F-102s Set For Test

Two specially-instrumented F-102s, equipped with GD/Convair-designed and installed photographic and test instrumentation, will be put to work next month as they are drawn into an evaluation of the Air Force Systems Command's new mobile air weapons control system.

Already, other F-102s from Tactical Air Command and Air Defense Command are flying over North and South Carolina in mock intercepts in a six-month program to test the system, known as 412L.

The air weapons control system, developed by AFSC's Electronic Systems Division, Hanscom Field, Mass., is designed for use outside the continental United States to provide control of fighting forces. The mobile control package can be disassembled and transported anywhere in the world by truck or cargo aircraft in contrast to the SAGE system, permanent installation for directing the air defense of continental United States.

The two instrumented F-102s have pilot-panel instruments located in the missile bay, along with a camera to record photographically what the aircraft actually does under test directions. Installation of photographic and test instrumentation was done at GD/Convair's San Diego facility last fall under a contract from Electronic Systems Division.

From the photographic record and other facts gathered at test sites, the Joint Test Staff, including AF personnel from various commands and contractor representatives, will test and retest the system's abilities and possibilities.

## 'Commonality' Emphasized in Bid For F-111

(Continued from Page 1) suspicious that it might not get all it wanted in the way of a TFX if Boeing got the contract.

"The Navy has no 'family relationship' with Boeing such as it had with Grumman," the article continued.

"GD's alliance with this 'Navy company' was of tremendous importance in view of the final result," the article stated. "It now had a partner whose planes had made more than half of all the takeoffs and landings on carriers. Moreover, the Navy knew that, with Grumman in the deal, there would be a concerted effort to meet naval requirements."

Evolution of the F-111's revolutionary variable wing is traced in the article.

Also traced in some detail is the early competition with nine airframe companies and three engine manufacturers, and finally action leading up to the 10-month "sudden-death playoff" between the two finalists.

"The TFX story began as a gleam in the eye of Gen. F. F. Everest, in 1959 the incoming commander of the Air Force's Tactical Air Command," the article reported.

A plane with low-level supersonic capability ready to meet the "new and tougher" conditions of the mid-sixties was envisioned by the general. Because of the limited number of airfields that could accommodate TAC's hottest fighter, the general called for a new fighter that could: land and take off on sod fields and runways far less than half the length necessary today; fly to Europe non-stop; dash in at tree-top level at 1,000 mph; and "loiter" at subsonic speeds for reconnaissance and ground-support missions, the article said.

By March 1960, John Stack, then assistant of NASA's Langley Research Center, advised Gen. Everest that the variable-wing configuration was feasible.

Finally, in October 1961 the Department of Defense issued its request for proposal and its specifications for bids on the TFX.

By the deadline on Dec. 6, the article continued, the "compromises and intricate strategies" had been synthesized into printed proposals typically 1,500 pages long and five feet in height. On Jan. 24, the Air Council, plus the Navy's representative met to consider the source selection board's vote, and a run-off was recommended. The Air Council proposed the eight-week extended competition between Boeing and GD-Grumman.

"Ahead, as we shall see in Part II," the article stated, "lay not eight weeks but 10 months of savage competition, important breakthroughs in design technology that brought GD-Grumman forward fast."



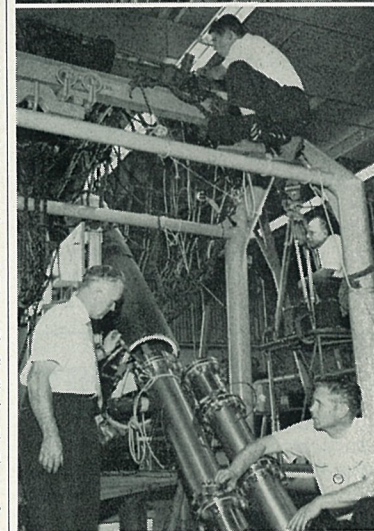
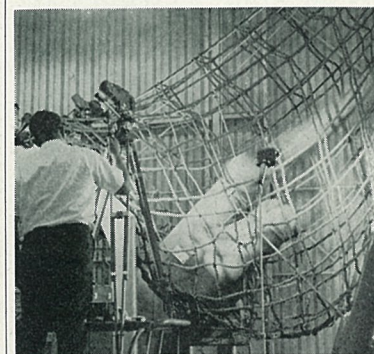
"He was the cutest bundle of pink when I picked him out for a pet."

## Probe Fired Into Net in Test Series

GD/Astronautics engineers have improved the launcher cap design for FLIP (Flight Launch Infrared Probe) and checked it out in sample firings at Plant 1 dynamics test laboratory, San Diego.

FLIP (General Dynamics NEWS, Feb. 6, 1963) is designed for in-flight launchings from space boosters to study missile trails.

To insure that the launcher



NETTED—Cargo net encases FLIP probe and cap while motion picture cameras catch faster-than-eye action during high G tests proving out launch cap and plug design. Below, dynamics test lab engineers, Will Hosmer and Larry Beck, ready probe as cameramen Robert Koser and Bill Stillman set cameras. Above, flash during split-second firing is caught on film by lensman Pete Auto.

cap and plug do not deflect the probe during firing, engineers found that the simplest method works best, according to D. D. Menz, Dept. 568-3 senior test lab engineer in charge of mechanical design of support equipment for the program.

Using a short cable to connect the glass-covered foam plug to the aerodynamically-designed cap, the plug is shot out of the way of the probe's line of flight.

A novel test setup involving a heavy cargo net was created to economically test the new configuration. It performed perfectly in 25 captive firings at high G forces simulating actual rocket thrust.

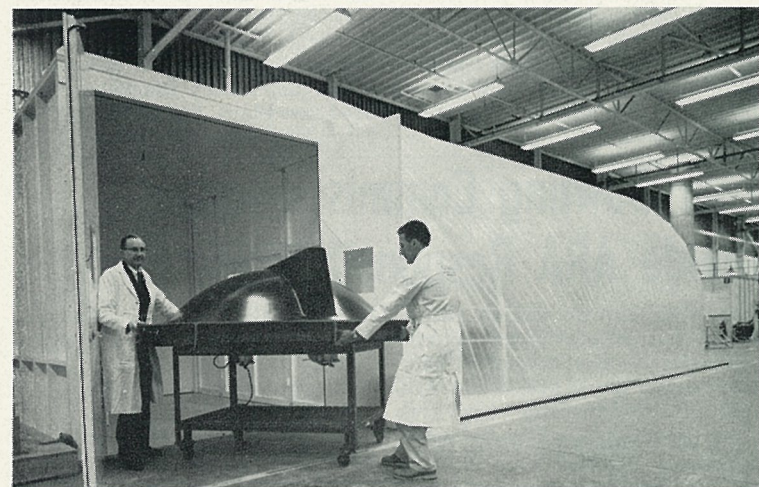
A two-section cargo net, padded at one end with canvas, caught both the cap and probe so they could be used over and over again to prove out the new, and simple, design theory.

Movies of the firings and cap ejections and data on amount and duration of force captured on the Memoscope, also photographed during tests, allowed dynamics test lab engineers to clearly observe clearance of the joined cap and plug, angle of departure of the cap relative to the probe's bumper assembly.

Engineers pointed out that such detailed information could never have been obtained in actual test firings and components certainly never could have been recovered for evaluation.

## STUDENTS HEAR SCIENCE TALK

Students at Lincoln High School heard General Atomic's Dr. Wayne E. Bell describe "The Role of the Chemist in the Nuclear Reactor Field" at a "Meet the Scientist" lecture in SD.



MOVING OUT—Alan Fullarton and Ralph Mansfield wheel part from GD/Astro "balloon room" after fabrication in dust free, environmentally controlled area. Parts move through large air lock shown here. Smaller lock on other end of balloon affords personnel access.

## Whoosh, Whoosh! Lo and Behold You've Blown a Plastic Room

It may start a trend in "inflate-it-yourself" construction!

In any case, a huge "balloon room" at General Dynamics/Astronautics provides a dust-free, temperature and humidity-controlled environment for metal bonding, and for fabricating reinforced-plastic, sandwich-constructed missile and space vehicle parts.

The "balloon" is a huge sheet of reinforced plastic film, which, when inflated, forms a room 30 feet long, 20 feet wide, and 15 feet high. Its length could be doubled easily and economically, if desired.

There is no internal supporting structure. Air pressure (as little as a half-pound) prevents the thread-reinforced polyethylene and Mylar film walls from collapsing.

Positive internal pressure is supplied by a special blower system which also filters dust from the air, and is maintained by

twin-doored air locks at either end which provide access to the room.

Ends of the plastic film are attached to semi-circular faces on the air locks, while water-filled compartments at the bottoms of the walls hold the room in place. The floor inside is coated with dust-inhibiting plastic.

As an added feature, the room is "portable." Air locks are demountable, and inflating the balloon is a simple procedure. An ordinary window-type air conditioner maintains and controls temperature inside.

Plaster, plastics and foundry (Dept. 454) employees who use the facility are under direction of foremen W. R. Walker and G. L. Olson. Al Stebbins, Joe Ortega, John Treat and R. C. Christopher are assistant foremen.

Alan Fullarton, tool design analyst, is "father" of the creation.





**TAKING OVER**—Quartet above takes over direction of ARA Employees' Council during April following annual election. They are, from left, Ezra Johnson, president; Marty Stutz, vice president; Jack Garrison, treasurer; and Cliff Kickbush, secretary.

## NASA Field Office at GD/Astro Links Centaur to Lewis Center

In September, 1960, three people set up an office in Bldg. 1 at General Dynamics/Astronautics' main plant. A sign on the door spelled "NASA"—National Aeronautics and Space Administration.

Today, an organization of some 40 persons mans this NASA field office, now charged with on-the-spot surveillance of one of the nation's most urgent space projects, the DX-priority, liquid hydrogen-powered Centaur.

The field office links Centaur development and production operations at GD/Astro with Lewis Research Center, Cleveland, Ohio, responsible for management of the program. It assures both customer and contractor of efficient communication, and quick response to all requirements, whether arising in Cleveland, or in San Diego.

Ronald Rovenger, assistant project manager, field, and direct representative of David S. Gabriel, Centaur project manager at Lewis Center, was first assigned to GD/Astro in early 1961.

A West Point graduate with an advanced engineering degree from Ohio State, Rovenger provides executive direction for his staff of four section chiefs.

Air Force Captain R. H. Campbell (one of the three original NASA staff members) heads engineering, the largest group, assisted by T. J. Lee.

NASA engineers work closely with their GD/Astro counterparts in all phases of Centaur design, development and test, and coordinate with Lewis Center on status, problems, etc.

Field office engineers appear wherever Centaur work is in progress: at GD/Astro test sites at Point Loma, Sycamore Canyon,

and Edwards RS. (At Edwards is the only other Air Force office assigned to the field office (Continued on Page 2)



**CENTAUR BOOSTER**—Pert Judy Sheffler models new Centaur pin, now available to GD/Astro employees.

## GOLD CENTAUR PINS ON SALE FOR \$1.30

A unique pin will permit General Dynamics/Astronautics employees to "show the world" they are associated with development of the nation's highest priority space project, Centaur.

The pin depicts a mythical Greek creature—half man, half horse—at full gallop and with bow drawn to launch an arrow.

A limited number of the gold-finished pins are now available at employee services office, Bldg. 8, Plant 71. Employees may purchase them during regular sales hours for \$1.30.

## Budros Named To Corporate Ind. Rel. Post

James L. Budros, who has spent more than 20 years in industrial relations work with General Dynamics Corporation, has been appointed director of compensation and personnel development for the company, Algie A. Hendrix, vice president-industrial relations, announced this week.



Budros had been manager of employee and labor relations at General Dynamics/Astronautics in San Diego. He joined Convair in 1942 as a safety engineer and held a number of industrial relations posts before being appointed chief safety engineer at the Fort Worth plant in 1948.

Named personnel manager at Fort Worth in 1953, Budros returned to San Diego in 1960 as assistant to the Convair vice president of administration. He served as corporate director of personnel administration from 1961 until his appointment to the Astronautics post in April of 1962.

A graduate of San Jose State College, Budros did graduate work at Stanford University Graduate School of Business.

## More Parking Lots to Close

Additional parking lots will be closed at General Dynamics/Astronautics over the next two weekends as a program of preventive maintenance continues.

Parking in these areas, marked by signs a week in advance, is prohibited.

Saturday (April 6) and Sunday the entire parking lot west of Bldg. 26 will be closed while final applications are being made.

On the same days, and also the following Saturday and Sunday (April 13 and 14), two reserved parking lots immediately in front of Bldg. 2 and the entire lot north of Bldg. 3 will be phased into the program.

Additionally, on April 13 and 14 the lot immediately west of Bldg. 4 (and south of the lot to be closed April 6-7) will be closed.

All parking lots at Astronautics are being included in the program which includes application of special sealing agent and restriping of parking positions. Whenever possible, additional parking spaces are being created in each lot.

## Astro Ranks No. 2 For Safety in '62

National Safety Council records for 1962 show that General Dynamics/Astronautics employees have for the sixth straight year finished among the top three firms in national safety ratings.

Astronautics wound up the year in second place among the nation's largest airframe manufacturers comprising the Council's Group "A" reporting unit. These are firms that worked more than four million manhours in the first quarter of 1962.

Ratings are based on the total number of lost-time accidents occurring for each million manhours worked. The Group "A" average was 1.24.

Astro had a .49 average, second only to Martin-Denver with a .36, yet ahead of third-place Martin-Marietta.

Although a "youngster" in comparison to established airframe manufacturing firms in Group "A," Astronautics has posted a year-by-year record hard to equal. In 1957, Astro's first in competition, only GD/Convair posted a better record. In 1958 and 1959 Astro finished third. For the next two years (1960 and 1961) Astro finished first!

GD/Astro's safety marks have been set while operating test bases and activating Atlas operational sites, not just those at the main plant.

J. W. Garrison, Astro's chief safety engineer, reports that during 1962 the main plant had an exceptionally outstanding year with only four lost-time accidents charged against it.

"While our base activation program had more lost-time accidents, the severity was minor in light of all-out efforts to complete these bases," Garrison said.

"Each employee, regardless of his job or place of work, shares in the pride associated with our accomplishments," he added. "Our past record is certainly a challenge to do even better in the future."

## Model Making Breakthrough Helped on TFX

General Dynamics-Grumman won the F-111 contract because of a higher degree of commonality and the greater likelihood that it would produce the plane on schedule and within the funds earmarked for it.

These facts were pointed out in the second and final installment of Richard Austin Smith's article, "The \$7-Billion Contract That Changed the Rules," appearing in April issue of Fortune magazine.

The article traces the "12-week" runoff between General Dynamics and Boeing that stretched into "ten months of backbreaking competition," climaxed by the decision in favor of Dynamics.

Convinced that both finalists met both Air Force and Navy design requirements in the final round of competition, Secretary of Defense McNamara turned his attention to a "point-by-point" comparison on cost, commonality and design, the article stated.

The military evaluation group's opinion was that Boeing was "in effect, proposing two different (Continued on Page 3)

## Dynamics Working Capital Up, Bank Borrowings Decline

Consolidated net income of General Dynamics Corporation in 1962 amounted to \$52,858,645, equivalent to \$5.29 per common share, Roger Lewis, president, disclosed last month in the corporation's annual report.

The figure was slightly more than a preliminary estimate released earlier (General Dynamics NEWS, Feb. 20, 1963).

The net income compared with a consolidated net loss of \$143,203,459 reported in 1961.

Lewis pointed out that because of the 1961 loss carry forward, no federal income tax has been charged. Without the benefit of the 1961 loss carry forward, con-

solidated net income would have approximated \$29,009,000, or \$2.90 per common share.

Consolidated sales of the corporation in 1962 were \$1,898,481,708.

Lewis reported that during 1962 consolidated short-term bank borrowings declined from \$169,171,264 at the end of 1961 to \$90,044,119 in December, 1962. During the same period, working capital increased from \$49,721,947 to \$128,144,701.

As of Dec. 31, 1962, Lewis reported the total business backlog was \$2,065,000,000. The Dec. 31, 1961, backlog was \$1,700,000,000.



**CLOSE CONTACT**—NASA field office at GD/Astro is in close touch with Centaur project developments. At left Dept. 967-5's Dick Smith gets assist with electronic checkout from J. R. Anders and G. J. Musicant of NASA. In center are some of clerks and secretaries who smooth office routine. At right are key field office fig-

ures, shown with Ronald Rovenger, assistant project manager, field. Standing are AF Capt. R. H. Campbell, Bill Ealy, Merle Perrine. Seated are Rovenger, W. Willoughby, Jim Stephenson. Field office shortens lines of communication; speeds response to requirements of both Astro and NASA.





COMING SOON—Kim, 5, daughter of Mr. and Mrs. Glenn Ritchie, Dept. 835-1, reminds David, 2, son of Mr. and Mrs. Clyde Chappell, Dept. 250, of impending visit of Easter bunny to ARA Area. All GD/Astro youngsters under 12 are invited to take part in free egg hunt, April 13 at 2 p.m.

## Log Book Entries

### Papers Presented

BRADSHAW—R. D., Dept. 598-5. "Heat & Mass Transfer in Fixed & Fluidized Beds of Large Particles," AICHE National Meeting, New Orleans, La., March 13.

CHRISTENSEN—E., Dept. 966-3. "Gold Plating for Thermal Control in Satellites," SD chapter, American Electroplaters Society, March 11.

GOODING—T. J., and HAYWORTH, B. R., Dept. 596-5. "Physical Processes in a Coaxial Plasma Gun," AIAA-Elect. Propulsion Conference, Colorado Springs, Colo., March 11-13.

HAUSRATH—A. H., Dept. 592-3. "Survey of Aerospace Vehicles," Statistical Structural Analysis," SD State College, Advanced Mechanics of Materials class, March 19.

HURLICH—Abe, Dept. 592-1. "What's New in Non-Ferrous Metals for Aerospace Applications," American Society for Metals, Los Angeles, March 19.

JENKINS—D. S., Dept. 528-0. "Thrust Vector Control Systems," AICHE National Meeting, New Orleans, La., March 13.

SCHWIDETSKY—W. H., Dept. 591-0. "Techniques, Limits and Uses of Technological Forecasting," SF chapter, Professional Group on Engineering Management, March 13.

TANALSKI—T. T., and CHAFEY, J. E., Dept. 592-1. "Compatibility of Aerospace Materials of Construction with Propellants," Annual Convention in cooperation with International Congress of Metallic Corrosion, New York City, March 11-15.

### Service Emblems

MAIN PLANT

Service emblems due during the period April 1 through April 15.

Twenty-year: Dept. 145-7, C. F. Gonzales; Dept. 250-2, V. H. Martin; Dept. 812-2, R. C. Van Sickle.

Fifteen-year: Dept. 140-2, J. E. Sanders; Dept. 250-2, Clyde Alfred; Dept. 337-4, W. F. Eddy; Dept. 401-2, W. H. Brown; Dept. 576-6, F. E. Sladek; Dept. 716-0, Anna H. Williams; Dept. 959-1, E. D. Melton.

Ten-year: Dept. 125-0, T. C. Mitchell Jr.; Dept. 332-1, E. N. Clifton; Dept. 527-3, C. G. Erickson; Dept. 579-1, R. W. Inscore; Dept. 682-3, L. G. Pickford; Dept. 715-0, F. C. Shaul; Dept. 731-0, E. A. Rueterholtz; Dept. 756-0, A. J. Burke Jr.; R. F. Lindley; Dept. 830-0, Ramona D. Ritchey; Dept. 975-6, Frances B. Summers.

### Births

MAIN PLANT

CAPATCH—Son, Victor Francis Jr., 6 lbs., 15½ oz., born March 22 to Mr. and Mrs. Victor F. Capatch, Dept. 324-2.

QUICK—Daughter, Sharon Diane, 6 lbs., 12 oz., born March 11 to Mr. and Mrs. Fred B. Quick Jr., Dept. 250-5.

WOODYARD—Son, Brian Keith, 7 lbs., 6 oz., born March 13 to Mr. and Mrs. E. D. Wooyard, Dept. 558-5.

### Deaths

MAIN PLANT

BEGLEY—James V., Dept. 191-0. Died March 13. Survived by sons Jon C., and James Jr.; sister, Mrs. Patricia Smith.

BUCKLEY—Daniel, Dept. 661-7. Died March 12. Survived by wife, Rose Marie.

GANNAWAY—Claude, Dept. 148-1. Died March 24. Survived by wife, Laudys, Dept. 101-6.

GIBSON—Harney C., Dept. 401-2. Died March 22. Survived by wife, Julia.

## General Dynamics NEWS

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## Dunn Appointed Van Horn Asst. For Engineering

C. J. Dunn has been named assistant program director-engineering for the Atlas Weapon System project organization at General Dynamics/Astronautics by W. L. Van Horn, vice president and program director—AWS.

In his new post Dunn will have complete responsibility for all engineering aspects of the program, reporting to Van Horn.

Reporting to Dunn are: E. R. McFadden, manager of systems engineering; Orison Wade, chief engineer-design engineering; and D. L. Fagan, manager of test and launch operations.

Named assistant chief engineer, electrical and electronic design, was W. Garcia. He reports to Wade.

Dunn joined Astro in 1957 as a staff specialist and later that year became a project engineer. Since early 1962 he has served as a chief project engineer.

Dunn hails from Gary, Ind., and attended Gary College before earning a BS degree from the Aeronautics University (Chicago). He held sales and engineering posts with Vega Aircraft, Northrop and Bendix Products before joining General Dynamics.

## Astro Son a Winner In Speech Contest

Marshall Hurlich, son of GD/Astro's Abe Hurlich, Dept. 592-1, won his school competition in the Lions Club Student Speakers contest, and placed second in a San Diego zone meet.

Marshall represented East San Diego Lions Club. He is a junior at Hoover High School, and spoke on "Conformity—A Real Challenge to Me." He belongs to the National Forensic Society.

## Ezra Johnson Elected 1963-64 ARA President

Ezra Johnson, president; Marty Stutz, vice president; Cliff Kickbush, secretary; and Jack Garrison, treasurer, are new officers to be installed by Astronautics Recreation Association during April.

This quartet was named 1963-64 officers of ARA by the ARA Employees' Council at its March meeting. They assume their new posts with the beginning of the new ARA fiscal year April 1.

Johnson of Dept. 401 was elevated into the presidency from his 1962-63 capacity as ARA vice president. He is commissioner of the Gun Club and a charter member of the Employees' Council.

Stutz, Dept. 452, was ARA treasurer in 1962-63. He is also a charter Council member and commissioner of ARA's popular Astronauts, square dance activity.

Kickbush is serving his first term as an ARA officer. He joined the Council in 1961 as commissioner of Astro Divers and has been active in skin diving operations since ARA was formed. He is in Dept. 971.

Garrison, chief safety engineer, formed the Astro Players, drama group, and has served as commissioner of that group since 1960. He, too, is serving in his first elective ARA office.

Three candidates were named for ARA's "Award of the Year" in recognition of their contributions to all phases of recreation at Astronautics. They are Chuck Ogle of Dept. 290, Ben Lachance of Dept. 547 and Jack Jones of Dept. 756. Ogle guides ARA's Astro Modelers, model airplane group, and was responsible for a winning float entered in the annual Mother Goose Parade this year. Lachance is commissioner of Hi-Fi/Music and helped form that group as well as build ARA's popular music center. Jones serves as commissioner of the Hi-Fi Workshop and has been a guiding light in building the ARA Area.

Votes have been cast for these candidates with results to be revealed at a later date.

## 'Mutiny' Sold Out But Another Scheduled

The originally scheduled performance of "Mutiny on the Bounty" for General Dynamics folk was a sellout.

However, those unable to get tickets for the performance this Sunday (April 7) need not despair. A second showing at the same 20 per cent discount rate has been scheduled for 2 p.m. April 14.

Loge tickets (\$2) and general admission (\$1.60) are available from employee services offices in Bldg. 8 (Astro site).

## NASA Field Office at GD/Astro Links Centaur to Lewis Center

(Continued from Page 1) besides Campbell. He is Major Joe Heatherly.)

The engineering function extends to coordination of Centaur launch operations at Cape Canaveral, including test planning, range coordination and safety, and construction and activation of the new Centaur Complex 36-B.

Merle Perrine is chief of the field office plans and program section which handles planning, scheduling, PERT review, and supervises the general financial status of the program.

The five-man staff of a contracts section under Jim Stephenson, chief, covers all Centaur contractual detail. This section works in close liaison with the Lewis Center contract administration group under L. C. Perry.

A quality assurance section is headed by Bill Ealy, chief, and is responsible for quality control policy, procedures, problem consultation, and general surveillance.

Reliability and checkout tasks are managed by an ARINC staff under W. Willoughby, which, with the quality assurance section, works closely with Robert Godman of Lewis Center reliability and quality assurance.

Detailed quality control and inspection functions are handled for NASA by the Air Force Plant Representative's Office at GD/Astro.

Presence of a NASA field office in their midst has afforded GD/Astro personnel involved with Centaur an opportunity for person-to-person relationships sometimes lacking in the customer-contractor situation.

Grant L. Hansen, GD/Astro vice president and Centaur program director, puts it this way:

"Through day-to-day association, both we and NASA profit from better and more intimate understanding of our mutual aims," he said.

NASA representatives sit in on Centaur change control meetings, and assist with acceptance procedures. As spokesmen for Lewis Center, they are frequently in a position to grant immediate approval of plans, reports, etc.

"Shortened lines of communication, plus the high level of technical and administrative competence represented in the local NASA office, have contributed materially to achievement of Centaur's role in the nation's space program," Hansen concluded.

## More Recommendations Of Engineers Sought

General Dynamics/Astronautics employees have been extremely helpful in recommending acquaintances qualified to fill 1,500 engineering and scientific vacancies occurring during 1963.

Still more recommendations are being solicited.

Astronautics seeks highly qualified engineers and scientists for work on current projects and active study programs such as Centaur, GLOTRAC, Nova, Atlas SLV III, lunar vehicles, manned space stations and a variety of orbiting and space probe vehicles.

Especially needed at this time are graduate engineers with experience in:

DYNAMICS ENGINEERING for work in stability and control conducting theoretical studies on control dynamics of large space boosters and space vehicles. This requires a familiarity with analysis

and synthesis techniques for establishing and evaluating control system parameters and a background in theoretical dynamics. Also, structural dynamics to determine response of an elastic space vehicle to transient turbulence, engine ignition and vehicle staging.

AERODYNAMICS ENGINEERING to perform research and development into space flight regime and space environmental conditions with particular emphasis in aerodynamic loading, hypersonic or supersonic flow, calculation of aerodynamic coefficients and trajectory determination.

THERMODYNAMICS ENGINEERING to develop design criteria and perform methods development in re-entry heating, heat dissipation in free space and aerothermal heat sources.

INERTIAL GUIDANCE for technical analysis in the establishment of guidance and flight control system requirements, analysis of system performance, establishment of test parameters and initiation of design changes. In autopilot design to assist in detail design and development of space vehicle flight control system including the autopilot, programming devices, passive tracking equipment and necessary test equipment design. Also in guidance system with knowledge of design and fabrication for subcontractor control with tasks ranging from pure analytical study to configuration control.

GUIDANCE AND TRAJECTORY ANALYSIS to provide support for programs covering broad spectrum of ballistic weapons systems and space boosters. Must formulate guidance equations, handle evaluation of new development methods and development of future guidance techniques. Advanced systems include radio-inertial, pure inertial, stellar-inertial, no gimbal inertial, terminal and homing. Also guidance system research to develop techniques, equations, simulations and trajectories necessary to perform launch, satellite rendezvous, lunar landing, re-entry and return automatic and manual guidance systems.

In addition, qualified men and women are needed for calibration laboratory engineering, technical writing, design assurance and reliability, 7070/7074 programming, electronics engineering, standards laboratory engineering, stress analysis, etc.

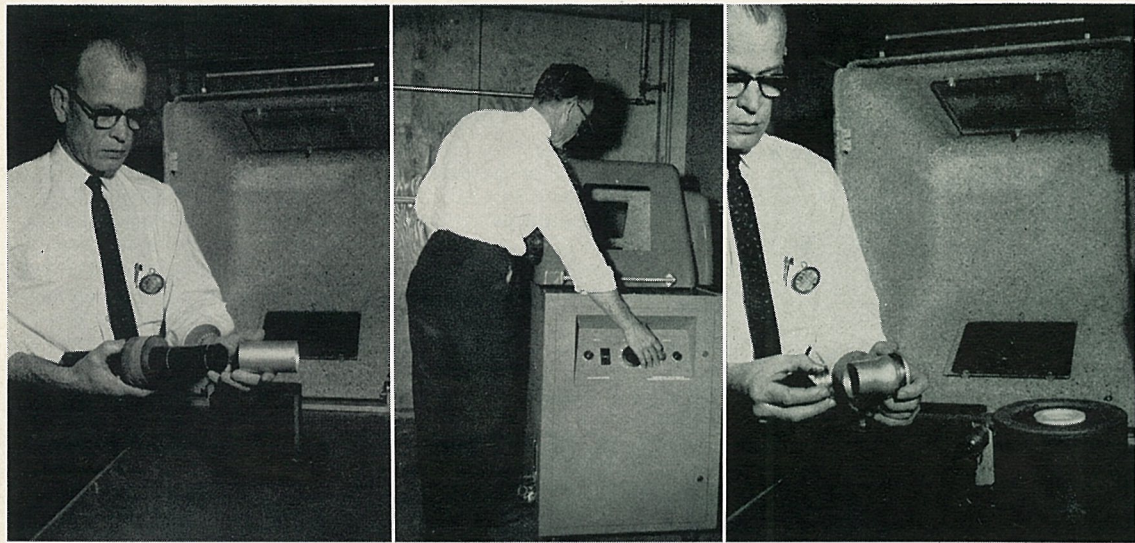
Astro employees may recommend qualified engineers and scientists by completing the recommendation form and turning it over to supervision.

Contacts with recommended individuals are being made directly by Astro's professional placement and personnel office. Questions may be referred to this group at ext. 2133.

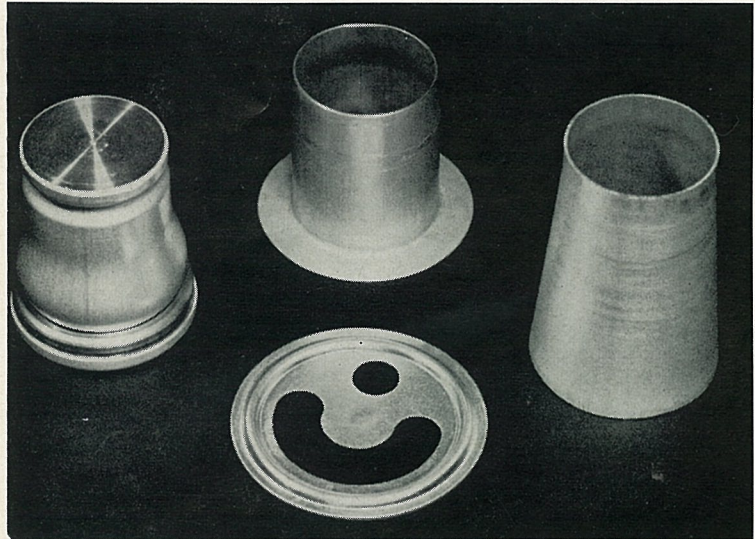
### I Would Like to Recommend . . . . .

Name	Tel.
Address	(City) (State)
His experience is in the field of.....	
Recommended by	.....
Dept.	Ext.
If we contact this individual, may we use your name as the person who recommended him? .....yes .....no.	





**MAGNETIC FORCE**—Demonstrating "Magneform" operation in construction of precision parts is GD/Fort Worth's K. F. Smith, senior manufacturing research engineer. At left he places tubular metal over work coil. In center he pushes button that sends machine into action. At right, part is ready for a second step.



**VARIETY**—Above are a few of many configurations possible with "Magneform" magnetic metal-forming process being used at GD/FW for forming precision parts in seconds. Machine is marketed by General Atomic division.

## Fins For Little Joe II Survive Vigorous Vibration Test Series

Design of swept-back fins for the Little Joe II launch vehicle was substantiated in recent vibration tests conducted at General Dynamics/Convair by a joint team of GD/Convair and GD/Astro engineers.

Four of the wedge-shaped aluminum fins, with 90-inch span, will perform as horizontal and vertical stabilizers when positioned on opposite sides of the launch vehicle's aftbody.

Dynamics design of the fin was confirmed, said engineers in charge of tests. In fact, there was little doubt about test results since the fins had been designed in the first place with extra strong structure supported by spars and ribs to preclude flutter.

"Under certain flight conditions an airframe structure, such as a fin, may be bending and twisting to the extent that it will result in structural failure," explained M. B. Rodriguez, GD/Convair senior dynamics engineer. "To prevent such failures, extensive theoretical investigations are made using weight, geometry, and stiffness data. These data are obtained from design drawings before construction of the fin. Because of the complexity of the structure, the estimated

data must be confirmed.

"Confirmation is accomplished in vibration tests which measure the way the structure bends and twists when it is vibrated. Measurements were obtained by placing an instrument at various points on the fin structure and recording the displacements. In addition, data from the vibration test was used to determine the structural damping coefficient which is a measure of how rapidly the structural vibration will subside after the excitation is cut off."

Though little motion could actually be seen during vibration of the large part, the low steady hum from the high-frequency vibration was heard in a building 50 feet away. On a still night the sound would be audible for several hundred feet at least, said engineers.

At conclusion of the test, Rodriguez said that results concurred with data used in theoretical calculations which indicate that no aeroelastic structural failure will occur during flight. Rodriguez monitored test progress which was under direction of Gene Barbic, GD/Astro dynamics test engineer.

## GD/FW Building Precision Parts By 'Magneform'

Incredibly rapid magnetic impulses are being used at GD/Fort Worth to swage and expand tubular forms.

The operation is done on the Magneform, a magnetic metal-forming machine perfected and now being marketed by General Atomic Division of General Dynamics.

"At top production, the machine is capable of turning out as many as 600 precision pieces an hour," said K. F. Smith, senior manufacturing research engineer.

Presently, Dept. 23 is experimenting with various bulging, blanching, and flat-piece configurations with an eye to using the process on future major programs.

Here's the way it works:

The metal part is placed on or in an appropriate work coil on the Magneform. Upon selection of an appropriate energy level, the machine's capacitors are charged to the equivalent of about 45,000 ft. pounds of energy, which is then dumped into the work coil.

"When the electrical current is produced, a magnetic field builds up," Smith said. "This generates eddy currents around the work piece, and these currents build up an opposing magnetic field. Since magnetic lines will not cross, the terrific resultant energy created is thrust into the metal tubing, which forms within about 20 millionth of a second."

"Magnetic impulses have been used to swage and expand tubular forms, as well as to coin, shear and form flat sheets."

To date, elsewhere, magnetic-pulse forming has been applied mostly in forming of conductors, such as aluminum, copper and brass. It is said to have been used to form poor conductors, such as stainless steel, when highly conductive coatings are used.

"Magneform eliminates many time-consuming operations required in conventional assembly," Smith said. "And in many instances, parts can be made which would be virtually impossible to make by conventional methods."

"Since the machine produces a uniform pressure around the edge of the assembly, a pressure-tight joint and seal can be made by swaging aluminum or copper cylinders together over grooved metal flanges or fittings."

The first Magneform machine was built at GD/Convair during 1959-60 with GD/Fort Worth entering the field about a year later. Advanced Products Department of GD built the second machine and the control circuitry for the present advanced unit now used at GD/Convair for swaging details for research projects. The GD/Convair forming group of applied manufacturing research has used the Magneform process to a limited extent in swaging ends for push-pull control surface rods for Convair jet transports.

## Model Making Breakthrough Helped GD-Grumman TFX Bid

(Continued from Page 1)

airplanes from the structural point of view," the article said.

"Boeing's total program cost for producing the Navy and Air Force versions of a common TFX showed that it expected a saving of only \$397 million . . . GD-Grumman reported a saving nearly twice that, \$623 million," the article said.

It was also pointed out that on final evaluation, Dynamics and Grumman had many fewer parts in its design than Boeing; Dynamics' total stood at 14,423 parts, 83.8 per cent identical in both versions; Boeing had 18,653 parts, only 60.4 per cent of which were identical.

"He (Deputy Defense Secretary Roswell Gilpatrick) was afraid mere 60 per cent commonality would prevent Boeing from making good on the crucial \$1 billion saving," the article continued.

Following the final evaluation, he (McNamara) "concluded that both contractors were still unrealistic on costs," the article stated, "but there just wasn't time at that stage of the game to insist that they develop more reliable figures . . ."

"GD-Grumman had based its costs on GD's extensive experience with supersonic fighter planes (the F-102 and F-106) and bombers (the B-58), and Grumman's 30 years of experience with carrier-borne aircraft; its bid was very low, but it expected to make a small profit."

"Boeing's estimates stemmed from its success with subsonic aircraft, like the B-47 and 707 jet transport, large open structures with much less compactness than TFX, yet it intended to produce this relatively small, highly complex fighter at manufacturing costs per manhour that were as much as 30 per cent below those prevailing throughout the industry . . ." the article continued.

"In comparing production plans," the article said, "it was found that GD-Grumman had adopted a conservative approach in that it expected the TFX development program to demand a high level of engineering and test effort."

Boeing, on the other hand, was clearly optimistic that few major problems or engineering changes would arise to challenge the validity of its extremely low engineering and cost estimates, the article said. This despite such innovations as thrust reversers, a variable-sweep wing, and the unique design for housing the engine.

"To McNamara . . . it looked as if Boeing had seriously misjudged the difficulties to be expected on this aircraft," the article said.

At the start of the "play-off" in January, 1962, according to the article, both finalists had "invested a great chunk of their technical resources in the contest—Boeing had 1,000 people assigned

to the TFX, GD had made it the sole concern of virtually an entire division—Fort Worth—and they had committed capital in equal measure.

"The corporate strategies for winning . . . remained substantially the same," the article continued. "GD-Grumman's strategy was to come as close as it could to giving Secretary McNamara what he wanted, one plane for the two services . . . Boeing would again go all out to satisfy the Air Force's requirements . . . at the same time it would do the best it could do to woo the Navy, which was mistrustful of the fact that Boeing had never made a modern Navy fighter."

Until the fourth round of competition started, both companies were "still in the dark as to how they were being judged." But before the final round they were treated "as if each had actually won the competition" and instructed that the "payoff points" would be design, commonality and reliable costs.

A breakthrough in designing process—a fiber glass wind tunnel model which made it possible to come up with a model in only ten days—enabled GD to make gross changes in its design in the final round, the article said.

Otherwise, supporting wind-tunnel data simply couldn't have been obtained rapidly enough to substantiate changes, the article pointed out. Previously, models had to be forged of stainless steel, requiring six weeks to two months to complete.

"That compression," the article quoted Robert Widmer, GD/FW vice president R&D, as saying. "permitted us to go back and look at the whole commonality problem again, instead of just making small changes . . ."

In the raw score following the final competition, the article stated, Boeing stood at 172.1, GD-Grumman at 175.6, only 3.5 points or less than 2 per cent apart.

"Boeing's prime appeal to the services was that it had designed for maximum specification (i.e., capability), but the company had been able to achieve this only at the expense of commonality. GD-Grumman's lesser appeal for the services stemmed from a design of minimum specification, the price it had had to pay for achieving a high degree of commonality," the article said.

"The chances were that Boeing's design would become even less common in the production stage."

### DYNAMICS MEN TAKE OFFICE

C. E. Royce of GD/Astronautics, and GD/Convair's Elmer Sperr have been installed as third vice chairman and treasurer, respectively, of San Diego chapter, American Society of Tool and Manufacturing Engineers. Earl Williams of GD/Astro served as program director and master of ceremonies.

## Function as Well as Product Come Under Value Scrutiny

"Value engineering is not the same as traditional cost reduction. Its purpose is to find the least costly way of performing a product's function, rather than the attempt to reduce its cost."

"Thus, value engineering is a functionally-oriented system rather than a product-oriented system."

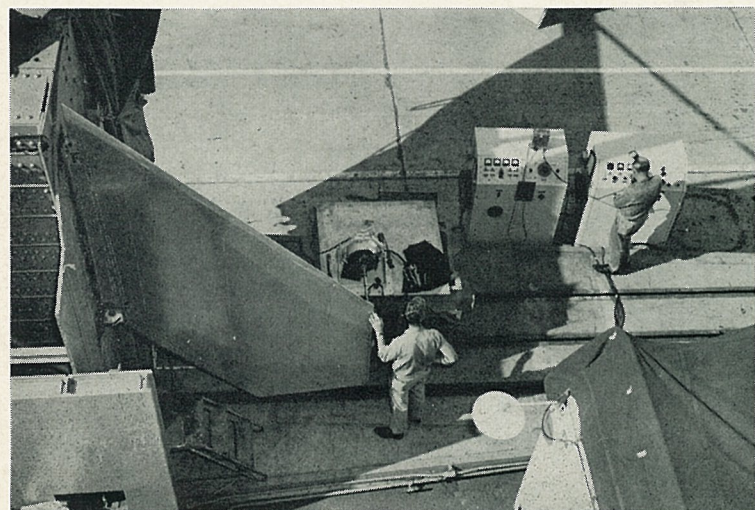
These points were emphasized by E. D. Heller, manager of value engineering at General Dynamics/Astronautics, in a March 13 address before the San Diego Chapter, National Association of Accountants, and the San Diego Chapter, Purchasing Agents Association.

Heller said the use of value engineering techniques makes it possible to identify and eliminate unnecessary costs from both products and practices, even though a good job may already have been done.

He added that cost is not necessarily a trade-off factor with performance and reliability, since these techniques make significant cost reductions while improving or maintaining performance and reliability. Too, a designer in the aerospace industry can not be held responsible for cost unless he has a reliable source of cost information, both for manufacturing and for procurement.

Thus, value engineering techniques can be used effectively in cost target programs in order to prevent unnecessary expense developing during the design phase, reducing the necessity of cost reductions to be made later.

Heller added that new Armed Services Procurement Regulations specify that virtually all Department of Defense contracts must have either value engineering incentive clauses, value engineering level of effort clauses or a combination of the two.



**STRONG FIN**—Shot looking down on aluminum fin for Little Joe II during recent vibration testing at San Diego clearly outlines wedge shape. Standing beside fin is Jim Brown, GD/Astro Dept. 756, while Ken Wharton, also Dept. 756, is at control console.





**SPOOKY**—Air-flow in General Dynamics/Pomona's ultra clean room was checked and photographed by use of small smoke generator and intense light beam. Laminar air flow distributed by large object (man) re-establishes itself very rapidly downstream and smoke had no tendency to migrate upstream or cross-stream in room.

## CENTAUR CONTRACT AWARDED BY NASA

Among \$30 million in major contracts awarded during February by National Aeronautics and Space Administration's Lewis Research Center were several involving General Dynamics/Astronautics.

Included was \$20,413,000 to fabricate and deliver Centaur vehicles and support equipment, flight readiness programs, and support and sustain a development program and systems integration; \$740,000 for installation of test equipment for launch site 36B, Atlantic Missile Range, for Centaur program; \$400,000 as continued funding of research and development contract for Centaur vehicle; \$611,075 for cathodes for thermionic converters; and \$103,000 for engineering studies in support of Centaur.

## Keen Students

### Field Rep and Wife Conduct English Classes For Japanese

Jerry Dugan, GD/Convair field service representative assigned to Japan Air Lines at Tokyo, Japan, has turned school teacher in his spare time.

Both Dugan and his wife, Mary, have held English conversation classes one night a week in their home during the nearly two years they've been living in the Japanese city.

Motivated by the great desire of the Japanese to speak English, fast being accepted as the second language of Japan, the Dugans are devoting their time to teaching several college and high school boys and girls.

"Although students are taught English in the schools, they don't have a chance to speak it. Instruction concentrates only on translation of English into Japanese. Most of the younger people who have completed high school can read English but can not speak it,"

## Smoke Clues Followed In Test of Clean Room

The revolutionary performance of General Dynamics/Pomona's new clean room was verified last month in a series of tests conducted by an outside agency.

Test results confirmed that dust levels in the cross-flow clean room are far below levels possible in conventional clean room designs.

Lt. Phillip R. Austin, project officer for U. S. Air Force clean rooms, Middletown Air Materiel Area, Olmstead Air Force Base Pa., was present to observe the tests.

"My observation of your cross-flow clean room was that it exhibited superior contamination properties. The contamination level of the room approached the characteristics of the filters used in the room," Austin said.

"Tests observed by me during normal activity in the room indicated that the contamination level appeared to be better than Air Force Class 4 clean room specifications," he added. "This type of room offers the greatest potential for the most economical and contamination free conditions in the country today. It appears that future exploration of more stringent controls will depend on their future development."

GD/Pomona placed the room in operation last fall (*General Dynamics NEWS*, Nov. 21, 1962) to process delicate instruments. It was the first laminar cross-flow type clean room of its size and created much interest when tests to classify the room taxed capabilities of measuring devices. The room was so dust free that a change is being made in military specifications.

In this new design, clean air enters the room through an entire wall of final filters at one end and leaves through return air registers at the opposite end. Fresh air makeup and air conditioning (temperature, relative humidity) are added to the air recirculated to the room. Air maintains a lineal velocity of approximately 100 feet per minute, and internally generated contamination is carried out at that rate. The room is 17 feet wide, 35 feet long and 8.5 feet high.

"The highest particle counts recorded in the room, near the outlet wall and downstream from particle producing operations, were at least one order of magnitude cleaner than the best conventional designed clean rooms. Areas near the filter wall were more than two orders of magnitude cleaner," L. F. Flinn, test engineer (Dept. 6), said.

To check laminar air flow, a small hand-held smoke generator and an intense light beam were used. The laminar air flow disturbed by large objects re-establishes itself rapidly and smoke introduced into the room cleaned out in two or three seconds.

## Weight Engineers Elect GD/Astro Men

GD/Astronautics men again dominate the slate of officers recently elected by San Diego chapter, Society of Aeronautical Weight Engineers.

They include Joseph E. Mullen, Dept. 663-5, chairman; Buddy H. Oman, Dept. 503, treasurer; W. H. Jacobsen, Dept. 663-5, secretary; and H. L. Jensen Jr., Dept. 965-4, elected to a two-year term as director.

Installation will be at an 8 p.m. dinner, April 12 at Luby's Restaurant, Pacific Beach.

Retiring officers are E. W. Koester, Dept. 966-8, chairman; Gerald Smith, GD/Convair Dept. 6, vice chairman; Mullen, treasurer; Jensen, secretary; and Ray Benson, GD/Convair, director.

## Nature of 'Crack Propagation' In Icy Outer Space Studied

A rocket vehicle is probing the icy reaches of space when a meteor slashes its side. Will the result be a catastrophic explosion? Or only a slight impairment of mission capability?

The answer will depend, in part, upon a phenomenon known as "crack propagation," the subject of continuing extensive research at General Dynamics/Astronautics.

Crack propagation is not a new problem. For years it has plagued engineers as one of the reasons for "break-up" in concrete highways.

Basically, a flaw or crack in material under stress tends to grow. This propagation may be slow. It may even stop as the load is reduced or remains constant.

But, if the stress increases, the crack may grow to a critical length, at which propagation occurs with almost explosive rapidity.

The American Society for Test-

GD/Astronautics' W. E. Witzell, senior research engineer in materials research (Dept. 592-1), has worked on crack propagation studies for nearly two years. He has added still another facet to the many-sided problem by conducting tests under cryogenic (extremely cold) conditions.

Incorporation of the cryogenic factor is significant because of the effect of cold upon performance of many materials, and because of the cryogenic nature of substances used in modern rocketry.

Witzell has developed two unique test chambers called "viewing cryostats" for use in his work.

A small model accommodates a specimen four inches wide and 10 inches high. The other, in which Terry Stockham of systems test labs (Dept. 565) assisted in design and development, accepts specimens up to 18x36-inches.

Specimens are usually thin sheets of high-strength metal such as is used in pressure vessels (tanks) of modern missiles.

The cryostats are windowed chambers which enclose the specimen together with a coolant—liquid nitrogen (-320° F.) or liquid hydrogen (-423° F.). Chambers are mounted in a universal testing machine which can apply up to 200,000-lbs. load to the specimen inside.

A narrow notch is cut in the test specimen perpendicular to the direction of stress, using the electrical discharge method. In small specimens a 1¼-inch notch is used, while a five-inch center notch is cut in large specimens.

A small ruler is fastened to the notch, and the specimen is loaded into the cryostat. Coolant is added to achieve cryogenic temperature.

Through surveyor's transits about 10 feet away, two technicians sight through a port in the cryostat to observe ends of the notch as the testing machine applies stress. Referring to the ruler, they make readings at intervals throughout the test as the notch grows to—and past—the critical point.

Results of repeated observations with a variety of specimens—stainless steels such as those used in GD/Astro's Atlas and Centaur, titanium alloys, even butt welds on these materials—have provided a wealth of data.

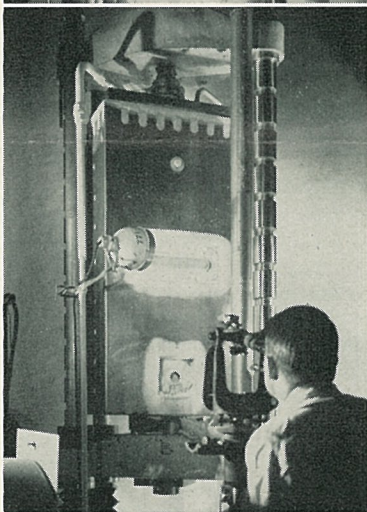
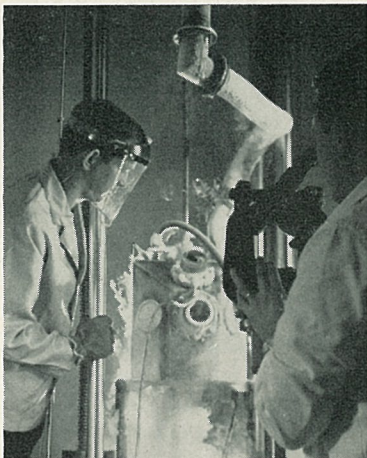
This information has verified suitability of Atlas and Centaur materials, and is highly significant to designers and builders of tomorrow's space vehicles.

This application at the design stage is the ultimate aim of Witzell's continuing study.

Accurate crack propagation data will permit engineers to base structural stress levels of a given material upon the known flaw size which can be detected by non-destructive methods.

Result: maximum reliability.

Encouraging the studies are Abe Hurlich, chief of materials and structural research, and T. T. Tanalski, material research. Assisting with setups and observations are technicians including Roy Neie, Jack Whitehead and Bill Atkins, Dept. 756.

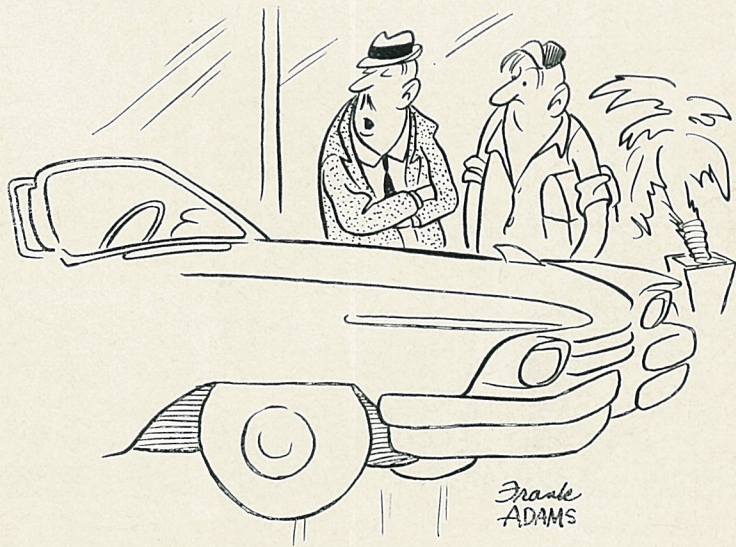


**CHILLY**—In top photo is small viewing cryostat, vapor shrouded, as Roy Neie and Dick Hargis, GD/Astro technicians, study "crack propagation" in simulated conditions of space. Below, large cryostat is locked in universal testing machine with Bill Witzell using transit.

ing Materials, which, with the Aerospace Industries Association is probing the phenomenon, endorses the theory that "if the energy released by cracking of a material is larger than the energy required to crack the material, the crack will be self-propagating at an extremely high rate until failure."



**HAPPY TALK**—Jerry Dugan, GD/Convair rep (right), wearing yakata, Japanese "at home kimono," converses in English with his students, from left, Hiroshi Akimoto, Jun Sawa, and Yoshihiro Ito. Kimono was gift from mother of one of students.



"It's our experimental model . . . You buy it, then see if you can make all the payments before it falls apart . . ."



## Centaur Space Vehicle Flies Coast to Cape

A flight-equipped Centaur space vehicle last month made the first of two trips scheduled for it during a "life time" of testing.

The vehicle—built by General Dynamics/Astronautics—was shipped via Air Force C-133B from San Diego's Lindbergh Field to Cape Canaveral, where it will be mated to an Atlas launch vehicle awaiting it there.

After a series of tests in Florida—some of which will proceed almost to the point of launch—both Atlas and Centaur will be sent to NASA's Lewis Research Center, Cleveland, Ohio, for still further testing.

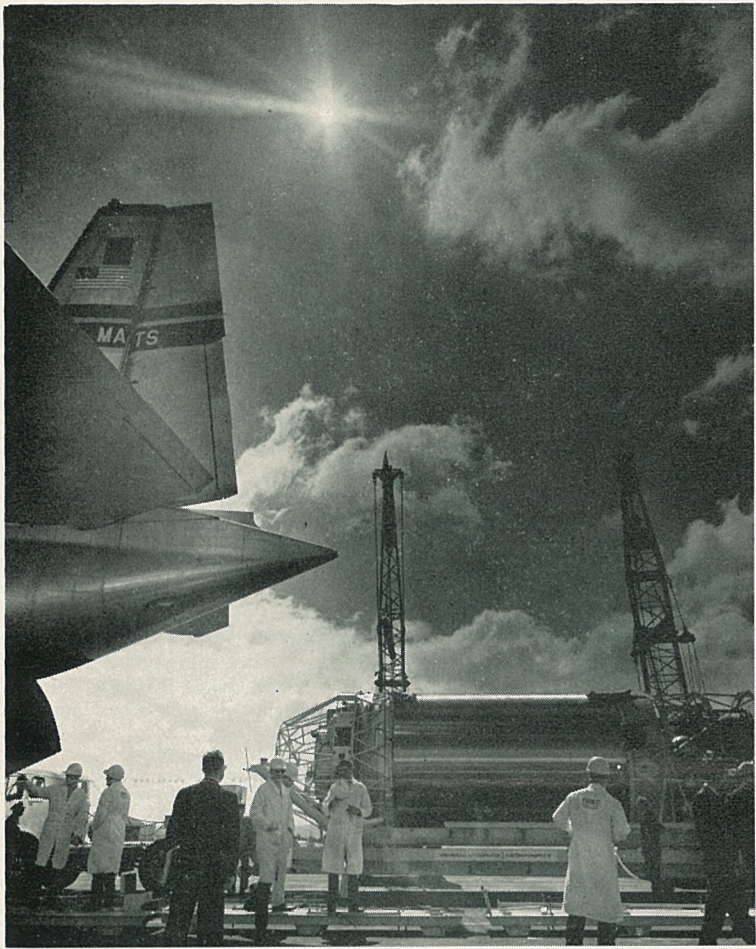
"The complete Atlas-Centaur is earmarked specifically for ground testing purposes," explained Grant L. Hansen, GD/

Astro vice president and Centaur program director.

"This enables us to perform tests on the total flight system as extensively and as often as required without interfering with program schedules, and without the full expense of actual flight tests."

Tests scheduled at Cape Canaveral for the Atlas-Centaur combination include propellant tankings with both vehicles, verification of launch procedures, launch crew training, and checks of both airborne and ground equipment operation.

Centaur is the first space vehicle to be fueled with liquid hydrogen. Its development has been assigned the nation's highest priority.



OFF FOR CAPE—GD/Astro-built Centaur is loaded aboard C-133B at San Diego's Lindbergh Field for flight to Cape Canaveral.

## Corporation Quality Control Committee Meets at GD/Astro

General Dynamics/Astronautics late last month was host for a two-day meeting of the General Dynamics (corporate) Quality Control working committee.

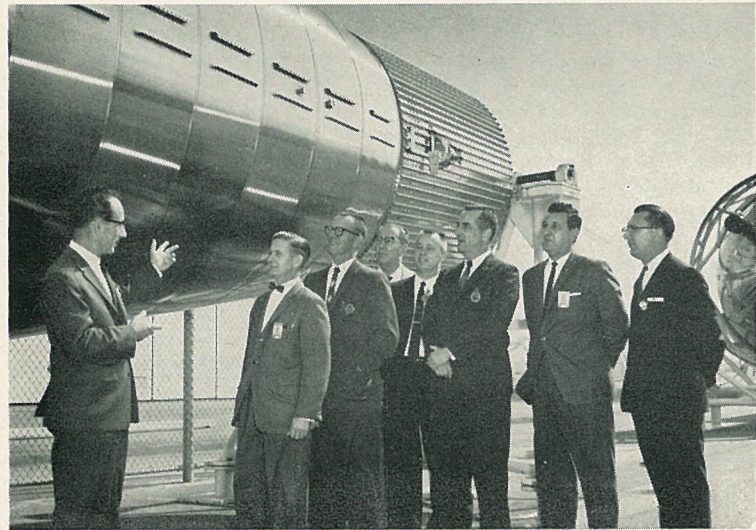
On the agenda were such topics as: discussions on the committee position relative to a proposed reliability survey questionnaire; development of a standard questionnaire for control of distributors; a proposal for the creation of a unified outside procurement inspection activity encompassing all divisions; tool and gauge control; a method for monitoring of suppliers' quality control system; open discussions; and a special presentation by GD/Pomona on

"Government Source Inspected Stock Items."

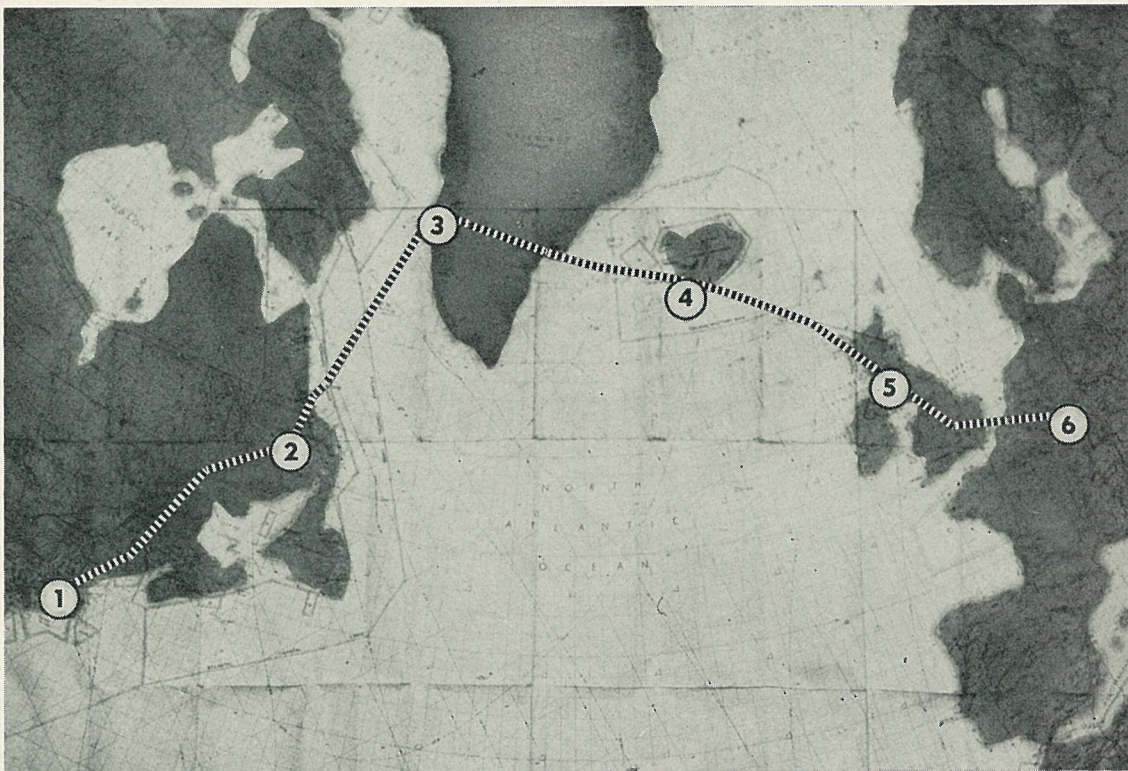
This committee is composed of representatives from such General Dynamics divisions as Astronautics, Canadair, Convair, Electric Boat, Electronics at San Diego, General Atomic, Fort Worth, Pomona and Stromberg-Carlson.

It was organized to develop between divisions a uniform philosophy of supplier relations, to initiate and pursue a standard system of quality control and quality assurance procurement practices.

Host for the affair was Astronautics' quality control function of reliability control department.



ON THE SPOT—General Dynamics Corporation quality control working committee met recently at Astronautics where Sam Braun, left, went over finer points in front of Atlas missile. Representatives from left are Braun, L. G. Menches (Astro), C. Wallman (Convair), C. W. Bailey (Pomona), W. Skrobiza (Electronics), D. W. James (Fort Worth), T. J. Marcella (Astro), and J. Treese (General Atomic).



F-102 ROUTE—Path of F-102s, making first transatlantic flight, is traced from (1) Hanscom Field, Mass., (2) Goose Bay, Labrador, (3) Sondrestrom, Greenland, (4) Keflavik, Iceland, (5) Prestwick, Scotland, to destination (6) Ramstein Air Base, Germany.—USAF photo.

## Work on 130-D For Mercury Earns Praise

Special praise for work involved in preparing Atlas 130-D for Project Mercury has been received at General Dynamics/Astronautics by President J. R. Dempsey.

Maj. Gen. Ben I. Funk, commander, Space Systems Division, Air Force Systems Command, wrote:

"I wish to express my thanks for the excellent job done by General Dynamics/Astronautics in having Atlas 130-D ready for the Mercury factory rollout inspection and subsequent acceptance on March 15. Your organization showed its true capabilities when it was able to recover from the difficulties preventing acceptance of the booster on Feb. 1 and just six weeks later to present to the Air Force the best Mercury Atlas launch vehicle possible."

"This vehicle represents the achievement of a long standing goal of the Mercury Atlas launch vehicle program in that it was delivered without any contractual deviations. I recognize that this goal was reached only through the extraordinary efforts of all of your Mercury people. You can be justifiably proud of them."

"I would like to add a special word of commendation to Mr. C. S. Ames (vice president-SLV) and Mr. R. W. Keehn (assistant program director-SLV) for their part in directing the 130-D operation and in improving your original schedule by two weeks. They have completely vindicated our faith in their ability to improve upon an already difficult schedule while still maintaining the superior quality demanded of a Mercury Atlas launch vehicle."

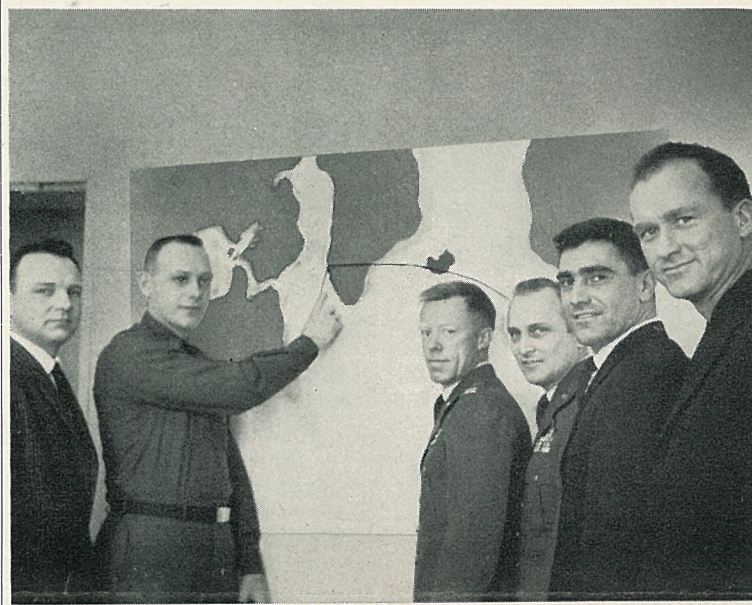
## Hurlich Talks On Cryogenics

Abe Hurlich, GD/Astronautics chief of materials and structures research, Dept. 592-1, made two appearances last month before technical societies.

Speaking before the Chicago chapter, American Society for Metals (ASM), he discussed "Evaluation and selection of materials for cryogenic temperature applications."

Later, he presented a paper on "What's new in non-ferrous metals for aerospace applications," at the Western Metal Congress, ASM, in Los Angeles.

Hurlich will participate in June in a symposium on advances in technology for stainless steel and related alloys arranged by American Society for Testing Materials in Atlantic City, N. J. He will also present a paper on "Evaluation and application of stainless steels in cryogenic environments."



AT FLIGHT'S END—Capt. John Doyle, AF pilot who flew one of two F-102s across Atlantic, points out flight pattern to GD/Convair reps Henry Vinz, far left, J. M. Barrett and O. B. Johnson, far right. Other AF officers are Capt. Herb Kalen and Capt. Jack Lee, pilot of second F-102 on over-ocean flight.—USAF photo.

## Two F-102s Fly Atlantic For First Ocean Hops

F-102s made their first flights across the Atlantic recently when two of the Convair-built jet interceptors made the transoceanic hop from Hanscom Field, Mass., to Ramstein Air Base, Germany.

The two specially-instrumented F-102s, attached to the Air Force Electronic Systems Division, are now in a test program of the Air Weapons Control System (412L) at Western European sites.

The new mobile system is designed to direct defensive intercepts of hostile aircraft and, also, guide aircraft toward ground targets (General Dynamics NEWS, March 20).

Air Force pilots Capt. John J. Doyle and Jack R. Lee were at controls of the F-102s on the ocean crossing. The entire journey was broken into five legs—from Hanscom Field to Goose Bay, Labrador, to Sondrestrom, Greenland, to Keflavik, Iceland, to Prestwick, Scotland, to Ramstein AB.

"Neither of us had flown in the Arctic region before," the pilots reported, "so the unique beauty of the ice pack and the ice cap at Greenland made the flight exceptionally interesting."

Both are long-time friends of Convair jets. Capt. Doyle, currently assigned to Fighter Branch at Hanscom as operations officer, has logged 500 hours in F-102s. Since 1958 he has been a test pilot in the F-102/106 SAGE programs. Capt. Lee, chief with the Fighter Branch at Hanscom, has spent 250 flight hours in the Convair craft. Both have 2,000 hours jet time.

Capt. Lee and another experienced F-102 pilot, Capt. Herbert D. Kalen now are flying the F-102s in the European area as test

pilots attached to the 412L Air Weapons Control Office. Capt. Kalen also is Joint Test Center representative.

GD/Convair representatives in Germany for the tests are J. M. Barrett, the division's 412L AWCO representative to the Joint Test Center; O. B. Johnson, F-102 airframe representative; Henry Vinz, F-102 integrated systems representative.

The two instrumented F-102s were to return to the United States this month to take part in current 412L testing over North and South Carolina.

## J. P. Maguire Elected To Board of MAA

J. P. Maguire, General Dynamics Corporation secretary, has been elected to the board of directors of the Manufacturers Aircraft Association for the 1963 term at the annual stockholders meeting.

The Association, representing major aircraft companies in the United States, administers the patent cross-licensing agreement for the country's airplane industry.



"Here's your supper, Dear, so you can go right on painting."





GOING AGAIN—Happy troupe of General Dynamics skiers is pictured on recent bus trip to Mammoth. Sponsored by ARA Snow Ski Club, trip will be repeated on still more elaborate scale April 19, 20 and 21.

## Stickney Rolls Series of 734 To Lead Club

Bowling teams from General Dynamics Management Clubs took three out of the first five places in the NMA Zone A tourney for Southern California and Arizona clubs the weekend of March 23-24.

Included in the 63 teams competing at Clairemont Bowl, San Diego, were 23 from the Astro club, seven from Convair and Electronics group.

Astro Tigers trailed the winning Douglas Aircraft team to finish second with a 3,059 team series. Top score was 3,081.

North American bowlers were third with 3,055; Convair Mixed-Up Five, fourth, 3,037; Convair Jets, fifth, 3,006.

Highlight of the kegling tournament was the performance of Gordon Stickney, a facilities control engineer in GD/Electronics, who turned hot to pile up the high individual handicap series of 734. Usually bowling with an average of 158, Stickney rolled games of 240, 224, 186.

Other individual trophies went to Larry Atwell of Astro, high individual handicap game of 282; W. Carlson of Robert Shaw Grayson Controls, high individual scratch game, 256; T. Sherman of Douglas, high individual scratch series, 646.

F. L. Erwin and Harry Lund were in charge of arrangements for the annual keg tournament.

## Discount Offered On Racing Tickets

General Dynamics folk can obtain 50-cent discounts on all seats for stock car and motorcycle races, weekends, at Cajon Speedway, Gillespie Field, using IRC discount cards available at employee services outlets.

"Super stock" races are scheduled April 18, 27, May 11, 17 and 25, while "claiming stocks" race April 6, 13, 20, May 4 and 18. Motorcycle races are slated April 5, 12, 26, May 3, 10, 24 and 31. On Memorial Day (May 30) both "super" and "claiming" stock events are scheduled.

Races start at 8 p.m. all days. Prices, with discounts, range from 75 cents to \$1.25. Children are admitted free.

## Salvage Schedule For April Listed

Salvage yard schedule for the next four weeks at GD/Convair and GD/Astro sites is:

GD/Astro—April 6, 20.

GD/Convair—April 13, 27.

## Mid-March Ski Trip Draws 86; Another Scheduled April 19-21

ARA Snow Ski Club's popular bus trip to Mammoth for General Dynamics ski enthusiasts will be repeated with another trek to the snow country scheduled April 19, 20 and 21.

A trip in mid-March attracted some 86 persons.

The April version is designed as a complete package: bus transportation, two breakfasts, three dinners, snacks on the bus, lodging, and all lift tickets, for only \$44.50.

Additional information and reservations are available from Hal Moore, ext. 1487 at GD/Astro's main plant, or after working hours at 277-4631.

The March trip was highlighted by Astro club races under chairmanship of Bill Witzell. Dave Talbot won advanced class, with Moore and Vicki Ebberly tied in

## Dynamics Men Seek Office in Society

Seven of the 10 nominees for office of the San Diego Chapter, American Value Engineers, are General Dynamics men, representing three San Diego divisions.

Nominated for president are A. S. Freedman, GD/Electronics manager of design assurance, and H. P. Williams, GD/Convair manager of value control.

Others are C. W. Christie of GD/Astronautics who opposes D. D. Shirk of Solar for first vice president.

Secretary nominees are P. E. McCourt of GD/Electronics and M. D. Weisinger of GD/Convair; treasurer, G. J. Bartolomei and A. R. Hermann, both GD/Convair.

Ballots are now in the hands of SAVE members with election results to be announced at the May meeting.

## Blair Valley Goal Of Trailer Group

Blair Valley is target this weekend (April 5, 6, 7) of Astro Travelers, ARA trailer club, as the group converges on De Anza-Borrego State Park for a Border District TTCA rally.

Last month, the group celebrated its fourth anniversary with a dinner-dance at Wagon Wheel Restaurant. ARA Commissioner Ray Parga was master of ceremonies.

Astro Travelers is open to all GD/Astro employees. Additional information is available from Parga, ext. 3805, or Bill Scott, ext. 1445, both at Plant 71.

intermediate category, and Charlie Hill and Norm Takvam sharing beginners' honors.

Gene Rockafeller and Moore handled trip arrangements.

ARA Snow Ski Club will hold its final business meeting of the season today (April 3) at 7:30 p.m. in ARA Clubhouse. The agenda calls for movies of the year's ski trips and presentation of trophies.

## ARA Club Hosts Annual Rally

Members of ARA Sports Car Club will remain on the sidelines to host other area sports car enthusiasts at the club's annual championship rally April 21.

The event, open to everyone except members of the Astro club, will get under way at 6 a.m. from in front of GD/Astro's Bldg. 2 reception center. The rally will last about 8½ hours, during which drivers will cover some 300 miles.

The route is described as including "some of the most beautiful scenery in the state," and includes provisions for adequate lunch and rest stops.

Championship regulations limit the number of persons in each car to two. Each driver is required to have a passenger who will act as navigator.

Entry blanks and additional information can be obtained from J. A. McRae, GD/Astro ext. 4251.

The ARA club meets at 7:30 p.m. on the third Thursday of each month in ARA Clubhouse. At the next four meetings, a series of films will be shown depicting the evolution of sports car events from 1902 to the present.

At the meeting April 18, the film "Heroic Days" covering 1915 to 1928 is scheduled. Visitors are welcome at all meetings.

## Hi-Fi Club Sponsors Recorded Concerts

Programs for free Friday night recorded concerts in the club studio have been announced by ARA Hi-Fi/Music Club.

Friday (April 5) the group will present the Nutcracker Suite and The Mikado, while the following program, April 12, will feature Liszt's "Hungarian Rhapsodies" No. 1 and 2; Enesco's "Rumanian Rhapsodies" No. 1 and 2; and the Grand Canyon Suite.

Programs begin at 7:30 p.m. both nights in ARA Clubhouse.

## Showers of Silver Dollars Added to Rain at Trap Shoot

Silver dollars, and rain, too, poured down on trapshooters turning out for the CRA-ARA Gun Club's second ATA registered trapshoot of the year, March 17, at Gillespie Field range.

Nine five-man squads pitted themselves against keen competition, and rough weather, in three divisions.

CRA Commissioner Jack Swank said that he was surprised that so many stalwarts, several from Los Angeles area, turned out on such a stormy day. Shooting continued throughout heavy showers.

Real hard cash, \$225 worth, was handed out to winners in four classes of the 16-yd. division, besides handicap and double target events. Only General Dynamics contestant in the money was George Clayton of GD/Convair who tied with Stan Eggers at 91 in Class D. They split the prize money of \$46.50.

Top shot was Lloyd DeKraai of Escondido who scored 99 out of a possible 100 in Class B for \$56.50.

Class A winner was Carl Haynes of San Diego with a 91. He won \$42.50. Jim Prewitt, also of San Diego, took top money of \$52.50 for Class C event with a 97.

Herb Langfelt of San Diego won the doubles with a score of 75 for \$15. Eggers won \$48.10 more as high scorer in the handicap event with 87.

First evening ATA registered trapshoot will be held Friday (April 12) as a trial run. If enough shooters enter, a regular schedule of Friday evening registered shoots will be scheduled throughout the summer months, said Swank.

Competition will start at 7 p.m. in two firm events—50 targets at 16-yd., and 50 handicap. If time allows, 25 pair of targets will be thrown for a doubles event.

The regular monthly Sunday ATA registered trapshoot will be held April 21 at Gillespie Field range with registration starting at 8:30 a.m. and shooting at 10

## GD/E ORGANIZING LAS VEGAS TRIP

General Dynamics people in San Diego have until this Friday (April 5) to sign up for a weekend of fun on a Las Vegas trip, organized by GD/Electronics.

Kay McCutchan, GD/E Plant 1, ext. 1762, and Juanita Jones, GD/E Plant 2, 298-8331, ext. 21, will take reservations until 4 p.m. on the Friday deadline date.

The Las Vegas weekend trip is set for May 17-19 and costs \$26 per person for transportation and two nights hotel lodging. Half must be paid at time of sign-up and the balance by April 29.

Chartered buses, enough for all who want to go, will leave the Bldg. 19 executive parking lot at 5 p.m. on May 17, and return travelers to San Diego about 9 p.m. on Sunday evening.

## GD/Astro Shooters Compete April 14

GD/Astro shooters have been invited to take part in matches sponsored by ARA Pistol Club at 9:15 a.m., April 14 at San Diego Police Pistol Range, 40th and "A" streets.

Both a .22 Camp Perry match and a .45 Short National event were fired at the club's last outing in March.

Ralph Sanderlin edged Gordon McPherson, ARA commissioner, 295-295 in .22 master class; Harry Black topped Ron Hughes, 287-280 in expert category; John Bennett fired 271 and Bill Worthington 258 in sharpshooter class; and Rod Eschenburg scored 248 in the marksman bracket.

McPherson's 279 edged Al Schindler's 278 in the .45 master class competition, with Bill Givens firing 227 and Angrim Carlson, 189, in expert class. Among sharpshooters, Worthington led Les Vivian, 221-175.

a.m. Silver service trophies will go to winners.

Gun Club members will compete in their regular monthly skeet, trap, rifle competition this coming Sunday (April 7) at 9 a.m. and meet in regular season next Tuesday (April 9), 7:30 p.m., Gillespie Field Clubhouse.

## Foreign Tour Rates Listed

General Dynamics employees in San Diego, through affiliation of their recreation associations, are eligible for a series of group tours to be offered to foreign points at various times this summer.

San Diego Industrial Recreation Council is sponsor.

Reduced rates through group participation are available to all employees and members of their immediate families. Tours are conducted by International Tours, Inc.

Departing Los Angeles May 17 is a 10-day tour of Hawaii with visits to the islands of Hawaii, Maui, Oahu and Molokai. Cost: \$295 per person.

Departing Los Angeles June 22, a 15-day visit to Mexico (Puerto Vallarta, Guadalajara, Mexico City, Taxco, Cuernavaca, Acapulco). Cost: \$295 per person. An optional return, at higher rates, is available via the SS Acapulco.

Departing Los Angeles Aug. 17, a 15-day Pacific island tour including Hawaii, Moorea, Tahiti and Bora-Bora. Cost: \$695 per person.

Departing Los Angeles Sept. 18 a nine-day inland water cruise from Vancouver, B.C. to Alaska and return. Cost: \$375 per person.

## Gardeners Set For Rose Show

Roses, roses, roses will be featured when CRA-ARA gardeners exhibit their prize productions in their annual Spring Rose Show Sunday (April 21) in the Floral Association Bldg., Balboa Park.

Final arrangements for the event, one of the two highlights of the year for General Dynamics clubs, will be made at tonight's (April 3) meeting at the Balboa Park site, said Commissioners Everett Henderson (Astro) and Gene Zimmerman (Convair).

Exhibitors may enter four divisions: roses, with 34 different classes for single, three mixed, six mixed roses, one-stem and three-stem floribunda and grandiflora, in different colors and blends; arrangements; corsages, open to roses, any cut flowers, orchids or other tropical blooms; and children's arrangements.

Best-of-show awards will be given for single rose, six mixed, grandiflora, arrangement, child's arrangement, three roses, floribunda, corsage.

All roses must be grown by exhibitors.

Entries will be accepted from 7 to 11 a.m. The public is invited to view the displays from 1 to 6 in the afternoon.

Classification forms are available at Astro and Convair employee services.

## Astro's Bob Byron Best of Speakers

Dynamic Toastmasters Club #457 placed a winner in the Area 5 speech contest held last month at Kings Inn.

GD/Astro's Bob Byron of the Dynamic group won the serious speech category with "Speak Your Mind." He will represent Toastmasters Area 5 in upcoming district competition.

The club will hold installation of officers tomorrow evening (April 4). The group normally convenes at 6:30 p.m. each Thursday in GD/Convair executive dining room, Pacific Hwy.



# Sports & Recreation

## Miniature Railway Project Planned in Recreation Area

An organizational meeting at 7:30 p.m. Friday (April 5) in ARA Clubhouse is scheduled to take a miniature railway scheduled for the recreation area "off the drawing board" and toward reality.

The park-type facility, in planning stages for some time, will be patterned after a real train and be capable of carrying children and even adults. Originally scheduled for construction are 3,000 feet of track, a diesel-electric locomotive and six cars.

Each car will accommodate some 14 passengers. When complete, the railroad will operate on weekends to provide still another attraction in the growing recreation complex.

Purpose of Friday's meeting is to locate employees and dependents interested in working on a project of this nature, and to set up an organization to expedite the program.

Once the diesel train is in operation (target date is early July), the layout may be expanded.

## RALPH LONG SHOOTS 75 GROSS FOR LEAD

Circle "R" golf course was scene last month of a unique "three clubs and a putter" tournament sponsored by ARA Golf Club.

Ralph Long took top honors in the 0-15 handicap bracket with low gross 75, trailed by R. Voorhees (76) and R. E. Cartwright (78). Low net in this category was 66 by J. D. Kring, with Gene Petzen, Ernie Stuchly and Tom McCulloch firing 68s.

In the 16-20 handicap league, T. Strait's 81 was tops for gross, followed by L. L. Siemers with 84, and C. A. Forgon and E. Peters with 85s. Low nets were 65s from Lee Kite and J. Hichman, 66 from R. Hodge, and 67s from E. C. Walley and Hal Heist.

Low gross honors in the 21-25 class went to W. Futch (89), and J. Serafin, C. Jones and J. Friedman with 94s; while low net score was 70-each from Sam Engleman, D. Booker, J. Miller and Phil Corbett.

An 87 from H. Frederiksen was low gross in the 26-and-up bracket, with J. A. Tarramagra shooting 93 and Tom Gammage, 86. J. A. Crush had low net with 62, with 67 from J. W. Bronn and 69 from V. J. McMillan.

Picking up a ball each in a blind bogey were G. L. Martin, C. J. Kruk, Vern Boyer, Bill Wray, Jim Duffy, Lou Marine, Ab Mosco, L. Kring and D. Jacob.

ed with addition of a live-steam locomotive and additional track.

Grading and layout will begin April 6.

Instrumental in planning the railroad project have been ARA Commissioner Marty Stutz, and Leo Heyob. Employees interested in the program have been asked to contact Heyob at Plant 71, ext. 1981, or after working hours at 466-9551, for additional information.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**ASTRO LENS**—Model shoot, 7:30 p.m., April 7, Photo Arts Bldg., Balboa Park. ARA Queen finalists will model.

**BASEBALL**—Prospective members of varsity team, contact Don Sanchez, Plant 71 ext. 1810, or Bud Mecham, Plant 19 ext. 1523.

**GARDEN CLUB**—Meets 7:30 p.m., April 3, Floral Assn. Bldg., Balboa Park. ARA-CRA Rose Show, April 21.

**GOLF**—Entries for IRC Tournament accepted through April 22, employee services outlets. Play May 4-5, 11-12, Torrey Pines and Balboa Park. Fee, \$1.50.

**GUN CLUB**—Monthly skeet, trap, rifle shoot April 7; meeting 7:30 p.m. April 9; registered ATA trap shoot, 7 p.m., April 12. All at Gillespie Field range.

**HI-FI/MUSIC**—Free lecture and demonstration, club studio, ARA Clubhouse, 7:30 p.m., April 9. Frank McAdam: "Are we advanced or archaic in our present-day stereo? What is really new?"

**ICE SKATING**—Mission Valley Ice Plaza. Skating 6:30 p.m. each Thursday.

**MODEL PLANES**—Astro modelers may enter CRA Aeromodelers' free-flight flying scale contest, April 6-7.

**MOTORCYCLES**—Meeting 7:30 p.m. today (April 3), ARA Clubhouse.

**SKIN DIVING**—Course in Red Cross swimming and basic skin diving instruction sponsored by Astro Divers. Registration, 7:30 p.m., April 10, ARA Clubhouse.

**TEEN CLUB**—No dance April 6. Next event, April 20.

**WATER SKIING**—Club meets 7:30 p.m., today (April 3), ARA Clubhouse. New members, beginners, welcome. Planning for coming season; information on free boat storage for boat owners.

## Twilight Golf Entries Open

Entries open next Monday (April 8) for ARA's 1963 Twilight League golf, with play starting May 21 at Stardust Country Club. Entries will be accepted through May 3.

Four leagues are planned with play starting both Tuesdays and Thursdays at 4:51 and 5:15 p.m. Competition will consist of match play by handicap.

For league purposes, a team will consist of two players plus an alternate.

Entries, in the form of "AVOs," should include full name, department number, plant and telephone extension of each player and alternate; the league day and time preferred, with second choice; designation of team captain; and a team name.

Fee of \$15 per team must accompany each entry, and will be accepted at employee services outlets.

Golfers will pay greens fees of \$2 per player per match, and will compete for merchandise certificates and trophies.

All entrants without an ARA Golf Club or 1962 Twilight League handicap will be asked to submit three 18-hole score cards before league play opens.

Only one handicap stroke per hole will be allowed for any match, regardless of the handicap differential between two players.

## Summer Keg Loops Form

Summer bowling leagues with their short season and leisurely pace represent an ideal time for beginning bowlers to break in or "drop outs" to start anew at GD/Astronautics.

Leagues sponsored by ARA will be opening in three major locations the week beginning May 12. Application forms for individuals or teams are now available at employee services outlets.

Clairemont Bowl continues as most popular among Astro-sponsored loops. Summer leagues operating there will include: a men's trio (480 men's scratch), a 675 party mixed handicap and a 760 mixed (730-760 mixed scratch) on Tuesdays; a 600-625 scratch men's foursome, a 725-750 mixed scratch and a 700 mixed handicap on Thursdays; and a 700 mixed handicap on Fridays. All start at 6:30 p.m.

Parkway Bowl will feature a single 700 mixed handicap on Tuesdays at 6:30 p.m.

At Poway Bowl will be a 7 p.m. Wednesday mixed trio loop.

A junior bowling program at Clairemont will be held on Saturdays (10 a.m.) for boys and girls from eight to 18. Entry blanks for this loop are available at Clairemont.

## Movie on Program For Fishing Club

Tonight's meeting (April 3) will inaugurate a change in schedule for ARA Fishing Club. Henceforth, the group will gather on the first Wednesday of each month.

Election of club officers takes top billing on tonight's agenda.

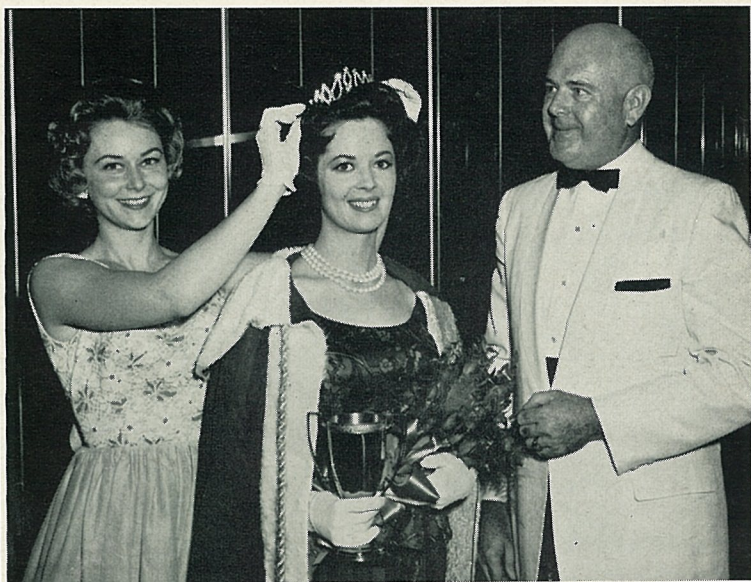
Also scheduled are fishing derby awards, special door prizes (including an expensive "Umco" tackle box), and showing of a color movie, "Outboard Fisherman, USA."

ARA Commissioner T. B. Field also plans to discuss a club overnight fishing trip.

He emphasized that club events are planned as activities for the entire family, and noted that dues for the coming year are now payable.

## GOLF TOURNEY SET FOR BONITA

Next ARA Golf Club tournament will be played at Bonita, April 20 and 21. Entries will be accepted at ARA headquarters, ext. 1111, from April 8 through April 17.



**NEW ROYALTY**—Ingrid Meyer places crown on Darleen Elson (Dept. 954) as latter becomes reigning "Miss ARA" and ARA President Ezra Johnson beams approval. Occasion was March fashion show during which Darleen and four princesses were named to reign over ARA events during coming year. Photos by Jim Gavett.

## Darleen Elson to Reign as Queen For ARA Events During Year

Darleen Elson has been named "Miss ARA" to reign over all Astronautics Recreation Association functions for the coming year.

Her attendants, all members of the queen's court who will also take part in ARA events, are Eleanor Boisselle (Dept. 603-1), Elaine Carter (Dept. 337-3), Virginia Mateja (Dept. 523-6) and Sandra Sandstrom (Dept. 324-4).

Selection of this group from a field of 16 finalists came March 20 at an ARA-sponsored fashion show. Judges were from outside Astronautics. The finalists also served as models for the show.

Darleen, a member of Centaur project's Dept. 954-2, is a petite brunette who has never taken part in beauty contest, etc., in the past. Her one comment on the moment of glory when Ezra Johnson, ARA president, crowned her was, "I was scared stiff."

Darleen is the second "Miss

ARA." Ingrid Meyer who wore the crown and gown last year is no longer with Astronautics. However, she was on hand March 20 to take part in the crowning ceremony.

## Entries Being Taken For National Bridge

Two sections of play each Friday continues to be the rule for ARA Bridge Club, now meeting in expanded quarters in ARA Clubhouse auditorium.

First place winners during March 15 play were: Section A, north-south, John Schuschni and Ann Burney; east-west, Janey Hogan and Francys Darr; Section B, north-south, Stella Cristy and Lucille Donan; east-west, Ron Bowen and Chuck Myrose.

The following week R. Klein and H. R. Cullough were first-place north-south winners in Section A, with Myrose and Bowen, east-west champs. In Section B, Mr. and Mrs. Bert Grindstaff were north-south winners, with Betty Crayton and Fred Whittler, east-west.

Applications for the NIRA tournament April 27, for which prizes will be awarded on national, regional and club levels, are still being accepted. Information and entry forms are available from ARA Commissioner Art Saastad, ext. 3012.

## Modelers Invited To Scale Contest

Astro Modelers are invited to enter their scale flying models in the CRA-sponsored Free Flight Flying Scale Contest this weekend, April 6 and 7.

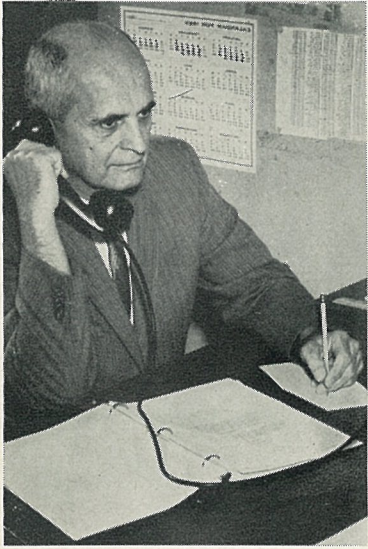
Models will be judged for appearance Saturday evening in the Convair cafeteria, Pacific Hwy., from 7 to 10 p.m. Flying will be held Sunday morning from 8 a.m. to 1 p.m. at the Clairemont Mesa flying site.

Entry fee is \$1, regardless of number, for seniors in both gas-powered and rubber-powered classes. Juniors may enter rubber-powered class for 25¢. Trophies will go to winners.



**NEW LEADERS**—Recently installed officers of Astro Wives' Club are (foreground) Mrs. Robert J. Buchan, re-elected president, and (standing, from left) Mrs. David Geyer, secretary; Mrs. Alfred R. Martin, second vice president; Mrs. Richard Besse, first vice president.





**EX-SKIPPER**—J. R. Pahl, chief librarian at GD/Pomona, was commanding officer of first USS Tattnell. Second ship by that name will be Tartar-armed destroyer.

### First Tattnell

## FORMER SKIPPER NOW AT POMONA

James R. Pahl, chief librarian at General Dynamics/Pomona, has more than a passing interest in the name given the Navy's newest Tartar-armed destroyer, USS Tattnell. He should, Pahl at one time was commanding officer of the first ship bearing that name.

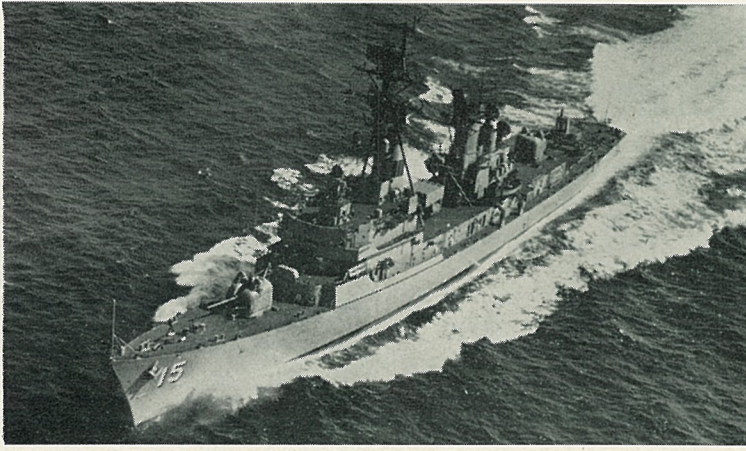
Pahl is a retired rear admiral, U.S. Navy. As a lieutenant he served as commanding officer of USS Tattnell (DD-125) from June 7, 1939, to June 25, 1940. The ship was then operating with a Special Service Squadron in the Canal Zone.

Pahl later saw action in the South Pacific from 1943 to 1945, during which time he won the Silver Star, the Legion of Merit with Gold Star and Oak Leaf Cluster, and the Bronze Star. He has been at GD/Pomona since 1954.

### Terrier, Tartar Fleet To Increase to 39

USS Tattnell (DDG-19) will be the 18th Tartar-armed warship to join the Navy's growing fleet of missile ships and the 39th ship armed with General Dynamics/Pomona-built missiles.

Tartar missiles now arm 16 destroyers and two cruisers. Advanced Terrier missiles arm 21 ships which include two carriers, two nuclear-powered ships, five cruisers and 12 frigates.



**UNDER WAY**—Third Berkeley class Tartar-armed destroyer will join fleet following traditional commissioning ceremonies for USS Tattnell (DDG-19) at Charleston April 13. USS Berkeley (DDG-15) is pictured here during sea trials.

## Another Tartar-Armed Warship to Join Fleet

The U.S. Navy will gain another Tartar-armed destroyer April 13 when USS Tattnell (DDG-19) is commissioned at Charleston, S.C.

General Dynamics/Pomona, prime contractor for the Tartar surface-to-air missile, will be represented at the ceremony by T. D. Brown, manager of Navy contract administration. Brown, on behalf of General Dynamics, will present a set of ceremonial stanchions to the ship.

The new guided missile destroyer is the second ship of the fleet to be named in honor of Capt. Josiah Tattnell, U.S. Navy and Confederate States Navy.

Born Nov. 9, 1795, on the family estate "Bonaventure," a few miles below Savannah, Ga., he served on board the frigate Constellation during the War of 1812. During the Mexican War he exhibited great daring in action at Vera Cruz. In 1859 he commanded the East India Squadron which supported negotiations of new treaties with China by Occidental powers.

Tattnell remained loyal to his native state of Georgia and resigned his commission Feb. 20, 1861. He was appointed a senior flag officer of the Georgia Navy and later became a captain in the Confederate States Navy. He commanded naval defenses in waters of Virginia, hoisting his flag on the iron-clad CSS Virginia (ex-USS Merrimac). The ship was burned to prevent capture when Norfolk was abandoned.

The first Tattnell (DD-125), placed in commission at Philadelphia Navy Yard June 26, 1919, length of 314 feet, normal displacement of 1,213 tons, design speed of 35 knots and a comple-

ment of 8 officers and 105 men.

During World War II, the first Tattnell served on patrol and escort duty until July 13, 1943, when the ship entered Charleston Navy Yard for conversion to a high-speed transport. Classification was changed to APD-19.

Tattnell (APD-19) earned battle stars for Elba and Pianosa landings during operations on west coast of Italy, landings during invasion of Southern France and assault on Okinawa Gunto. The ship was decommissioned Dec. 17, 1945.

The second Tattnell (DDG-19) was constructed by Avondale Marine Ways, Inc., New Orleans La. The keel of the guided missile destroyer was laid Nov. 14, 1960, and the ship launched Aug. 15, 1961.

### Engineers Co-Author Article on Alloys

Four General Dynamics engineers are listed among the five authors of a major article, "Structural Alloys for Cryogenic Service," in the current issue of Metal Progress, monthly journal of the American Society for Metals.

The article details significant improvements in the low temperature properties of commercial alloys by controlling degree of cold work, thermal treatment, alloy content, and impurity level.

GD men joining in research and compilation of the article are J. L. Christian, W. E. Witzell, Abraham Hurlich of GD/Astronautics, and J. F. Watson of General Atomic division. Fifth author, J. E. Chafey, now with Fairchild Stratos Corp., was formerly with GD/Astro.

## Successful Pod Drops End Kirtland Program

A pair of high-altitude, high-speed pod drops recently closed out a "very successful" multiple weapons pod drop program for GD/Fort Worth at Kirtland AFB.

"This was a smooth running program from the start," said R. P. Andrews, team captain, who has since joined the F-111 effort. "All told, we made 33 multiple weapons drops at various speeds and altitudes."

Main purpose of the program was to determine separation characteristics and stability of the weapons, and other factors.

B-58 No. 38 was used throughout the program, with a crew of Fred Voorhees, pilot; Fred Hewes, navigator; and Ken Timpson and O. D. Lively, defensive systems operators.

With the program closing out on schedule, virtually the entire GD/Fort Worth contingent at Kirtland AFB moved back to Fort Worth. GD/Fort Worth has had an office at Kirtland for this and other programs since 1957.

W. T. Tally is remaining at Kirtland to handle supplies and other matters.

Hustler No. 38 was returned to GD/Fort Worth following the tests and will continue multiple

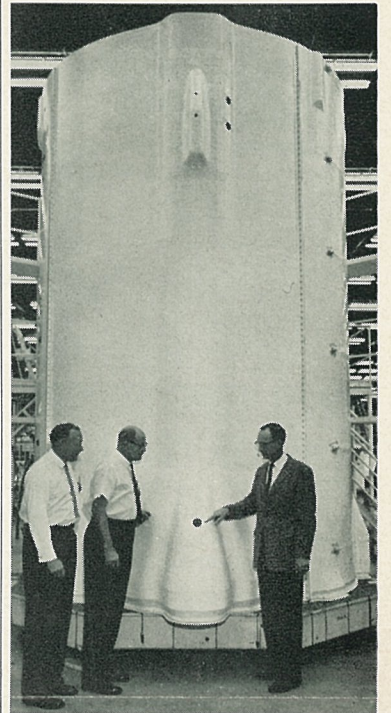
weapon stability and control flights for about 90 days from Fort Worth, with the exception of a pair of two-component pod flights over Eglin Gulf Test Range.

The two flights over the Gulf will be made at high altitude and at near-maximum speed.

## GD/FW Building Insulation For Centaur Tanks

Insulation built at General Dynamics/Fort Worth will be included on the Centaur space vehicle during future space shots.

The Fort Worth division is making special insulation panels which will encapsulate the Centaur upper-stage vehicle fuel



**INSPECTION** — Taking final look at Centaur panels before shipment to GD/Astronautics are, from left: J. E. Topliff, E. H. Callan, and W. A. Bratton, GD/Fort Worth.

tanks during launch.

In addition, GD/Fort Worth is designing, and will eventually manufacture, several sets of lighter weight insulation panels which will go on production Centaur models.

The first five of these fiber glass, foam-filled honeycomb panels — prototypes of a refined version to be used in later space missions — were shipped to General Dynamics/Astronautics in December.

The panels are 18 feet long and 8 feet wide. They will be spliced together to form a thermal barrier preventing heat absorption and reducing boil-off of liquid hydrogen and liquid oxygen in fuel tanks prior to and during the launch operation.

"Ultimately, the panels will be jettisoned in space to reduce weight and increase payload capability for the vehicle in space," said W. A. Bratton, acting project engineer.

Bratton pointed out that special redesign provisions were incorporated in these panels to avoid difficulties met in the first launch.

E. H. Callan of tooling projects coordinated tooling and assembly operations on this set of panels; E. C. Costantino, Dept. 35, handled honeycomb foaming and bonding operations; and J. E. Topliff, general foreman, Dept. 11, supervised assembly operations.

### Canadian Attache Pays Pomona Visit

Capt. V. W. Howland, RCN, assistant naval attache to the Canadian embassy in Washington, D.C., visited General Dynamics/Pomona March 22.

Captain Howland, who was accompanied by LCDr. A. P. Campbell of his staff, was briefed on Tartar and Mauler production facilities at the Pomona division.

## Recreation Area at Fort Worth Reproduced in Authentic Replica

The ingredients: toothpicks, wire, pinheads, plywood, papier-mache, sandpaper, silk hose, textone, cardboard, twigs, lichen, sponge, and glue.

The architects: Glenn Carter and Clay Price, GD/Fort Worth Recreation Association ice skating and model airplane commissioners.

The result: an amazingly authentic 3½-by-8-foot replica of the GD/FW Recreation Area, made meticulously to scale, even down to a tiny model airplane.

"We worked about 4½ months on the project, starting last October," said Price. "I'd say we averaged about three nights a week and most weekends."

Both builders are professional engineers and prided themselves on getting things to a 1-inch-

equals-40-foot scale.

"A six-foot shrub, for example, measures out at about one-seventh inch," Price said. "We had to make virtually every building and fixture ourselves, since none of the items was sold commercially."

Papier-mache and textone were placed over the contoured base of plywood and wire mesh. The surface was then painted green for grassy areas, black and brown for roads and parking areas, and blue for rivers and ponds.

The junior baseball diamonds are replete with wire-mesh backstop, fine-wire fences, and lighting systems made of toothpicks topped by pinheads to represent banks of lights.

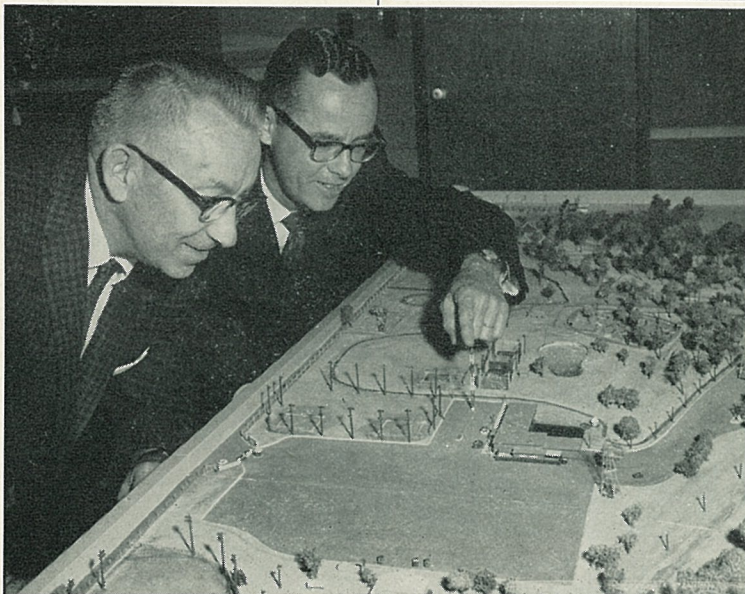
The fieldhouse and clubhouse are made of block wood, configured authentically and topped with sandpaper to simulate a gravel roof. Shrubbery was formed mostly from lichen (a small plant growth) or sponges, cut to shape and painted. Trees were made by gluing lichen to small twigs.

Down in the picnic area, the GD/FWRA Express is ready to roll. The engine and all three cars are built painstakingly from match sticks! In the middle of the track, of course, is the miniature golf course, with its colored-

paper putting surfaces.

At one end of the layout stands the ranch area: ranch house, barn, caretaker's house, horse stall, arena (complete with catwalk and judges stand).

Tennis enthusiasts note with pride the faithfully duplicated lighted courts, with nets made from women's silk hose.



**WORK OF ART**—Glenn Carter and Clay Price of GD/Fort Worth pridefully examine their handiwork, a marvelously authentic reproduction of GD/FW's recreation area.



"Go ahead! He's on the club payroll."





**FULL HOUSE**—Astronautics' annual safety awards dinner was packed with leaders from five departments who deadlocked for first place during 1962 safety contest at main plant. Here is group with special guests and directors of AMR and PMR operations who also received safety awards.

## Astro Seeking \$140,000 Slash In Phone Costs

"A realistic evaluation of actual requirements" is seen as the key to slashing a dramatic \$140,000 annually from telephone costs at General Dynamics/Astronautics.

Since early this year, representatives of Pacific Telephone have been surveying GD/Astro departments to determine what equipment is actually needed to provide adequate service at minimum cost.

Supervision plays a vital role, by cooperating in realistically analyzing needs of their groups.

"The survey is one phase of a continuing program to eliminate unnecessary telephone costs at GD/Astro," explained J. H. Johnson, director of management systems.

Johnson pointed out that a basic installation—one line, one instrument—costs only \$1.50 per month. Each additional line with attendant "push buttons," signals, etc., plus associated equipment required to operate it, increases the cost drastically.

"Obviously, one person can use only one line and instrument at one time. Only five calls can be received at once in an area served by five lines—regardless of how many instruments are available," Johnson noted.

"We have no intention of compromising service where it is needed. However, we do hope to trim costs by eliminating equipment at any point where it exceeds actual need."

Approximately \$3,000 per month was trimmed from telephone costs by the survey in its first two months of operation.

## Five Depts. Limelighted At Safe Awards Night

The location (ARA Clubhouse), awards (trophies) and host (President J. R. Dempsey) were the same, but otherwise General Dynamics/Astronautics' sixth annual safety awards dinner had little in common with those of past years.

Normally, leaders of one or two departments are feted, but this year there were leaders from five departments.

Those departments wound up 1962 deadlocked for top spot in safety standings. More unusual, each had completed an entire year of work without a single serious medical case!

Winning departments were production electronics (Dept. 781 under Ed Russell), dispatch and stores (Dept. 223 under D. F. Kline), major assembly (Dept. 758 under Ray Kendall), processing (Dept. 733 under Mel Goodhart) and tool services (Dept. 460 under Joe Ottoman).

Each department received a trophy. In addition, Astro's Atlantic Missile Range operations received the Atlas safety award

## Taylor Commended For SAE Services

Romie A. Taylor, GD/Astronautics chief of engineering support, has been commended for services to the Society of Automotive Engineers.

R. R. Malik, SAE president, lauded Taylor's "outstanding support" during the past five years as head of the society's aerospace ground equipment committee.

Astronautics was also commended for cooperation and support of Taylor's activities in this period.

for tops among test bases and Vandenberg AFB received a plaque recognizing two consecutive years without a disabling injury.

In Plant 71 standings which include 20 reporting units the emphasis this year was on safety alone, rather than safety and good housekeeping considered in past judgments.

Departments were judged on the number of serious medical cases logged. Considering Astronautics' definition of a serious medical case, the records of the men and women responsible for the winning efforts were outstanding.

For instance, a serious medical case may be a disabling injury; any fracture; any laceration requiring sutures; any non-disabling injury in which a physician prescribes work restrictions or motion limitations for more than one day; any job incurred eye injury requiring a physician's treatment; back injuries; any injury serious enough to be classified by either physician or safety inspectors, including those requiring a physician's attention which occurred due to violation of established safety regulations.

In addition to departmental leaders and J. R. Dempsey, taking part were Vice Presidents Mortimer Rosenbaum, E. D. Bryant and W. W. Withee. Factory Managers F. B. Kemper (electronics) and J. P. Hopman (fabrication and assembly) were on hand as well as superintendents and managers responsible for winning departments.

M. V. Wisdom, director of industrial relations, was master of ceremonies with J. W. Garrison, chief safety engineer, assisting.

## Jones Co-Chairman For Space Seminar

CAPE CANAVERAL — M. C. Jones, Dept. 571-7, will participate in a Space Science Seminar sponsored by Canaveral Council of Technical Societies, April 25 at Florida Industries Exposition, Orlando Municipal Auditorium.

Jones, site engineer for General Dynamics/Astronautics' Complex 12 here, will be co-chairman for the afternoon session.

Three presentations by NASA, and one each by Air Force, Army Corps of Engineers and General Electric are planned.

## DR. DAVID MEISTER TO DISCUSS 'ERRORS'

Dr. David Meister, GD/Astro Dept. 652-4, will be guest speaker at a meeting of Ryan Management Club May 16. He will discuss "Production Errors."

## Action Groups To Streamline Material Flow

General Dynamics/Astronautics' concerted effort to refine and improve material handling has moved into high gear with five Action Task Groups now in operation.

These teams, comprised of four to six members each, are assigned to specific areas of GD/Astro facilities. Their purpose is to streamline communications on material handling subjects, and to provide strategically located action groups for parts and material handling problems.

Task Group I, with J. P. Hopman, chairman, will operate in Bldg. 5 and adjoining areas at the main plant. Members are L. I. Medlock, G. A. Grossaint, R. H. Gilliland, E. J. Huntsman, F. J. Parker and J. F. Speed.

F. B. Kemper heads a similar group in Bldg. 33, with J. F. Baebler, W. F. VanDusen and R. E. Muelchi. In Bldg. 4, A. J. Woodington, J. R. Couchois and V. G. Mellquist work with Chairman P. T. Gardner, while R. E. Poling is chairman of a group comprised of S. Braun, H. L. Williamson and Parker, covering the materials building (92).

The fifth Task Group will concentrate on Plant 19 operations.

Here, E. A. Reynolds is chairman, with R. J. Hendrickson, W. W. Pierce, H. S. Murphy, G. E. Garrison and K. R. Aiken.

The Task Groups were established in a joint action of E. D. Bryant, vice president-operations, W. W. Withee, vice president-engineering, and P. I. Harr, director of reliability.

Essentially, they will spearhead an effort to locate any problem situations within their areas and attack them.

Sitting in on most Task Group sessions is N. D. Baird of applied manufacturing research and process development (Dept. 290), who, with his staff of six specialists in handling operations and four packaging experts, will lend technical assistance wherever required.

In establishing the Task Groups, Bryant, Withee and Harr assigned basic responsibility for proper parts and material handling to first-line supervision.

To assist them in meeting this obligation, a special training program will be initiated in the near future by educational services (Dept. 130-3). Some 325 assistant supervisors will receive this instruction.

## New Liquid Carbonic President Appointed

Appointment of John A. Edwards as president of Liquid Carbonic Division of General Dynamics Corporation was announced last week by Roger Lewis, president.

Edwards, a veteran of 23 years in the compressed gas industry, succeeds John F. Thurston, who has left the company. Edwards was formerly executive vice president. Division headquarters are in Chicago.

At the same time, Lewis announced appointment of Laurence F. Davaney as vice president-United States operations of Liquid Carbonic.

## STAFFORD, BAUMAN VIE IN CLUB VOTE

Astronautics Management Club's "political pot"—brought to a boil just once each year—is beginning to simmer.

Which means the annual campaigning associated with picking a new slate of officers is at hand. Last week a nominating committee headed by Walt Blakey presented its recommendations. Nominations were also accepted from the floor at that time.

Balloting will begin shortly with new officers to be presented at the May meeting.

Presidential candidates for the coming year are C. Joe Stafford, traffic general supervisor, and Ralph T. Bauman, Dept. 756 general foreman.

Tom F. McCubbin, chief of operations control, and C. Larry Hartshorn, chief plant engineer, are candidates for first vice president. Named opponents for second

(Continued on Page 2)

## Fairchild Alumni Will Hold Reunion

All GD/Astronautics and Air Force employees formerly assigned to Fairchild AFB during activation of Atlas launch sites there have been invited to a reunion party April 27 at Casper's Ranch Club, El Cajon.

The buffet and dance will begin at 7 p.m., with a door prize drawing later in the evening.

Tickets at \$3.50 per person are available from W. F. Chana, Sycamore ext. 47; at Plant 71, Tom Gammage, ext. 1603; Don Zathan, ext. 2176; Bill Hawkins, ext. 698, or Bob Franklin, ext. 3493; at Plant 19, Jim May, ext. 2041; or George Robertson, ext. 1232; and at the Fordham Bldg. from Earl Coon.



**WISE SHOPPER**—Pert Bonnie Schroeder, Dept 130-9, takes sensible approach to selection of telephone to fit her needs—and her budget. Hal Madden of Pacific Telephone explains service provided by variously equipped instruments and their relative costs to GD/Astro.



**TASK GROUP**—Backed by array of shipping containers is Bldg. 5 material handling Task Group, one of five such teams established throughout GD/Astro. From left are G. A. Grossaint, J. F. Speed, N. D. Baird (technical adviser), F. J. Parker, R. H. Gilliland, E. J. Huntsman, L. I. Medlock, and Chairman J. P. Hopman.



## Plant 19 Tool Store Shifts to New Spot

Employees' tool store at GD/Astro's Plant 19 (formerly Plant 2) has been moved into a new location.

It is now at the north end of Bldg. 28 (cafeteria building), next to the safety crib. Open hours are 1:30 to 4:30 p.m., Monday through Friday.

The tool stores, operated by the Western Metal Supply Co. at GD/Astro and GD/Convair facilities in San Diego, offer tools and miscellaneous supplies at discount prices to employees of the company.

## 'Lawrence of Arabia' Discount Offered

GD/Astro employees may purchase discount tickets for a special showing of the Academy Award-winning movie "Lawrence of Arabia," slated for 2 p.m., April 28 at Loma Theater.

Loge tickets are \$2.20 and general admission are \$1.80, a 20 per cent discount in both cases. They are available at employee services office, Bldg. 8, during normal sales hours.

## Log Book Entries

### Service Emblems

#### ASTRONAUTICS

Service emblems due during the period April 16 through April 30.

Twenty-five-year: Dept. 141-2, C. V. Spear; Dept. 480-0, J. C. Connor, E. F. Miller.

Twenty-year: Dept. 144-5, Fred Lay; Dept. 324-2, J. T. Ready Jr.; Dept. 573-4, W. C. Bowen; Dept. 654-2, Samuel Merkowitz; Dept. 715-0, E. L. Martin.

Fifteen-year: Dept. 142-1, J. W. Collins; Dept. 250-1, N. L. Oftedahl; Dept. 337-5, T. O. Jinks; Dept. 344-3, V. J. Lavis; Dept. 378-1, L. E. Peterson; Dept. 526-6, L. R. Kinzel; Dept. 758-0, J. S. Good; Dept. 831-1, Hadley Johnson; Dept. 833-4, H. C. Brown; Dept. 835-2, Eva D. Ulsund.

Ten-year: Dept. 142-1, Marcus Abeyta; Dept. 143-1, J. A. Townsend; Dept. 148-1, G. A. Rummel Jr.; Dept. 151-0, J. W. Bell; Dept. 194-0, J. P. Corbelle; Dept. 322-4, V. L. Yansch; Dept. 344-3, Norman Chaudoin; Dept. 373-1, C. F. Hill; Dept. 401-2, J. V. Torcellini; Dept. 403-1, Marie B. Snellings; Dept. 454-0, F. J. Gill, T. N. Norman; Dept. 576-7, Allidean E. Payne; Dept. 756-0, T. H. Fisher; Dept. 758-0, R. E. Eide, G. W. Vinas; Dept. 759-0, W. H. Thomas, C. E. Williams; Dept. 781-0, Frances L. Drakowski; Dept. 964-3, J. S. Roux; Dept. 965, H. H. Grogan, W. T. Umberger; Dept. 966-8, O. W. Ayers.

## Papers Presented

FOWLER—Calvin D., Dept. 681-0. "Checkout of Mercury-Atlas Launch Vehicle," American Institute of Aeronautics and Astronautics, Cocoa Beach, Fla., March 18.

STORY—H. O., Dept. 146-0. "Component Failure Analysis," General Dynamics Panel on Reliability and Quality Control, Fort Worth, Texas, April 1-3.

## Births

#### MAIN PLANT

BROWN—Son, Gerald Curtis, 5 lbs., 8 oz., born March 27 to Mr. and Mrs. E. A. Brown, Dept. 641-3.

ILSTRUP—Son, David, 7 lbs., 1 oz., born Feb. 3 to Mr. and Mrs. Marshall Ilstrup, Dept. 564-2.

RIVERALL—Son, Roger Nick, 9 lbs., 2 oz., born April 2 to Mr. and Mrs. Robert Riverall, Dept. 759-0.

#### VANDENBERG AFB

EVANS—Daughter, Tracey Denise, born March 20 to Mr. and Mrs. Dexter Evans, Dept. 576-4.

## Deaths

#### MAIN PLANT

WHITEMAN—Harney C., Dept. 573-3. Died April 6. Survived by wife, Eileen, two sons aged 7 and 10.

## Personals

Please accept my sincere thanks for your help and kindness upon the death of my husband, James Corio, Dept. 250-1. Mrs. James Corio and children.

Your kind expressions of sympathy upon the death of my husband are deeply appreciated and gratefully acknowledged. Mrs. Nicholas L. Carter and Judy.



NEW TECHNIQUE—Comparison of engineering drawing with computer-produced Net Change List holds attention of (from left) A. E. Andress, R. R. Tompkins, T. F. McAleer and R. E. Poling. Document is milestone in progress toward totally integrated material management system at GD/Astro.

## Computer System Milestone In Material Checking Plan

Early last month a computer at General Dynamics/Astronautics printed out a neat, columnar document—and marked a milestone in the division's moves to establish a totally integrated material management system.

The document, known as a Material Requirements Net Change List (NCL), has been produced as a weekly report since its introduction. Special reports are available at any time, should they be required.

The NCL and the system which produced it represent major strides in maintaining and improving GD/Astro's competitive position, by providing improved responsiveness to the materials aspect of contract fulfillment.

For each end-product GD/Astro contracts to produce, a vast array of parts or materials must be made or bought, assembled and tested to meet contract terms.

But contracts change. Engineers find new and better ways to build products already "in the works." And each change in contract or specification may result in far-reaching modifications in the kind or quantity of materials required.

Before the computer (an IBM 7074) system was called into play, this material release depended in large measure upon an earlier document called the Material Requirements Summary (MRS).

This report listed only changes in the requirements of individual articles, and demanded extensive manual calculations to determine these requirements, multiplied by the number of articles involved in the next larger assembly, and multiplied again by the number of specific articles for which the requirements are effective!

R. E. Poling, GD/Astro manager of material operations (Dept. 830); R. R. Tompkins, chief of material control (Dept. 831); and A. E. Andress, manager of data systems, combined efforts to streamline the system.

Poling defined basic philosophies and control requirements suited to GD/Astro's unique research and development, production, and test site operations, with Tompkins contributing his years of experience in developing the

systems concept.

In data systems (Dept. 156-0), Andress assigned John R. Mackley to supervise preparation of system specifications, while Dave Rickert directed programming, testing and "de-bugging."

Efforts of a working team comprised of Tom McAleer and Bert Mercer of material operations, B. S. Gamson, R. W. Warwick and Rickert of data systems, guided the system to completion.

Result is a system which fills the role of the earlier MRS plus associated manual calculations, and additionally summarizes on the Net Change List by contract, contract fund item, and in total by material number.

The system includes an Advance Bill of Materials (ABM) master file, with which the computer can calculate material requirements from ABMs on each specific article affected—even though effectivity is given as "one and on."

A built-in editing program in the system detects, rejects and reports any errors.

"This system provides positive control of material release requirements, and a sound basis for 'buy' or 'surplus' decisions," Mackley explained.

"In addition, it permits accurate identification of contracts for which specific materials are required, allows accurate conversion of parts requirements to materials requirements, and affords us the capability to react on a mass basis to requirement changes."

## STAFFORD, BAUMAN VIE IN CLUB VOTE

(Continued from Page 1)

vice president were George G. Congdon, AWS assistant chief engineer—design support, and Jack A. Croft, chief of educational services.

Don K. Slingsby, SLV checkout foreman, and Gordon G. Prentice, manager of program control—electronics, are recording secretary aspirants.

Running for financial secretary are Frank L. Cook, supervisor of security and investigations, and Keith G. Blair, supervisor of library and information services.

Jack F. Scanlon, labor accounting general supervisor, and Fred A. Fox, contract termination administrator, are treasurer candidates.

Four candidates were named for two one-year vacancies on the Board of Control. They are Norman D. Baird, manufacturing research supervisor; Carl D. Dragila, chief of telemetry data processing; James R. Evans, tooling general foreman; and Frank J. Hickey, chief of administrative services—electronics.

J. Robert King, production control supervisor, and J. L. Mumford, planning and control—Centaur supervisor, will vie for one two-year board term.

Two men from a field of four will fill three-year board vacancies. Candidates are Albert Amison, production control general foreman; Cornelius Beard II, traffic supervisor; Maynard L. Bjorstrom, sub-assembly and mockup general foreman; and Rolland K. Swanson, community relations supervisor.

## PERT/Cost Systems Task Force Formed to Survey Capabilities

Creation of a PERT/Cost Systems Task Force at General Dynamics/Astronautics has been announced by J. H. Johnson, director of management systems.

This group, made up of representatives of many functions, will operate on a full-time basis to examine current capabilities and customer requirements. They will direct and carry out systems development of changes required. Once systems requirements have been fully defined and plans of action established, the task force will meet as required.

Each member of the task force

has been authorized to make work commitments for the organizational elements he represents and is responsible for performance to those commitments.

C. R. Walker, contracts, is chairman. Others include R. E. Poling and F. D. Robbins, operations; J. R. Tucker, controller; C. E. Diesen, management systems; A. J. Gillette, research, development and engineering; R. H. Quinn, material; M. R. Seldon, reliability; J. C. Cannady, Centaur; G. E. Putness, AWS; R. A. Wohl, SLV; and G. G. Prentice, electronics.

## Stephen Van Tuyl Will Receive \$800 Mgt. Club Scholarship

Top winner among finalists in the General Dynamics/Astronautics Management Club scholarship program was Stephen Van Tuyl. Stephen is the son of Bob Van Tuyl of Dept. 377-1 and will receive \$800.

Winner of a \$400 scholarship was Linda Litchfield, daughter of Irving C. Litchfield of Dept. 322-1. Awarded \$100 scholarships each were Craig Hendrickson, son of Wylie Hendrickson of Dept. 142-1, and Keith Hill, son of Arthur Hill of Dept. 191-0.

In addition, each of the other four finalists received \$50 Savings Bonds. They were Franz Jaggard, son of Anne Jaggard of Dept. 170-1; Steven Mann, son of Paul F. Mann of Dept. 835-3; Patricia Pitkin, daughter of Ray Pitkin of Dept. 547-3; and Jerry

Smithson, son of Evelyn L. Smithson of Dept. 140-1.

Theodor Tanalski, son of Ted Tanalski of Dept. 592-1, withdrew from the competition after being named one of the original finalists.

The eight competing youngsters met April 10 for interviews with a special panel of judges.

Judges were Mrs. Helen Cobb, councilman, City of San Diego; Robert D. McKay, director of admissions, California Western University; V. L. Viskas, financial vice-president, San Diego Imperial Corporation; and Astronautics' Dr. Sam Kaye, Ray Sodoma and Emory Thurston.

Scholarship winners and their parents will be honored at the May Management Club meeting.



KEY SESSION—Finalists in Astro Management Club scholarship program stand behind judges. From left: Linda Litchfield, Keith Hill, Stephen Van Tuyl, Craig Hendrickson, Franz Jaggard, Jerry Smithson, Steven Mann and Patricia Pitkin. Judges, from left: Ray Sodoma, Robert McKay, Mrs. Helen Cobb, V. L. Viskas, Dr. Sam Kaye. Not shown are Theodor Tanalski, contestant, and Emory Thurston, judge.

## ARA Coiners Install DePauli as President

Coiners installed new officers at an annual banquet last month.

Master of ceremonies was retiring ARA Commissioner Joe Garside, while Lou Panosh, former president of American Numismatic Association, was installing officer.

New president of the group is John DePauli, Dept. 130-1, with Jim Watt, Dept. 142-2, vice president; Heston Booker, Dept. 403-3, secretary; Richard Freedman, Dept. 371-1, treasurer; and Robert Earhart, Dept. 401-4, and Joe Givens, Dept. 410, as board members.

Guest speaker was Douglas Decker of San Diego Coin Club.

## J. J. Curley, Former Astro Man, Dies

Interment with full military honors at Fort Rosecrans National Cemetery was held April 10 for J. J. "Mike" Curley, former executive development administrator at General Dynamics/Astronautics.

Curley, U.S. Naval Academy graduate and retired Navy captain, died April 10. He joined Convair in 1951 and retired at Astronautics early this year.

## DR. YOSHIHARA NEW SPACE SCIENCE MGR.

Appointment of Dr. Hideo Yoshihara as manager of space science (Dept. 596-0) at GD/Astronautics, has been announced by Mortimer Rosenbaum, vice president-research, development and engineering.

Dr. Yoshihara succeeds Dr. A. E. S. Green who is leaving the company.

Holding bachelor, master's and a doctorate degree in engineering and aeronautics from University of Michigan, Dr. Yoshihara was previously group leader for space science's fluid physics and hypersonic studies.

Since joining General Dynamics in 1956 he has concentrated research efforts in areas of hypersonic gas dynamics, plasma dynamics and rarefied gas studies.

Previous to this he spent 10 years with the wind tunnel branch (transonic and hypersonic flows) at Wright Field (now Wright-Patterson AFB, Dayton, Ohio).

Dr. Yoshihara is a native of Long Beach, Calif. He is an associate fellow of the Institute of Aerospace Sciences.



Dr. Yoshihara

## General Dynamics NEWS

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# Divisional Cooperation On Problems Urged

General Dynamics divisions must assist one another in the solution of potential or real problems in order to achieve a high degree of product quality.

So said J. Y. McClure, General Dynamics director of reliability and quality control, at a GD Panel on Reliability and Quality Control meeting at GD/Forth Worth April 1 through 3.

"Many of these problems are mutual," McClure said. "Keep in mind that our company has consultants and experts in many fields of endeavor."

"These experts are available if we simply ask for their services. Please do not let pride or autonomy stand in the way of seeking division or corporation assistance."

McClure's keynote speech was one of several general presentations at the meeting, which included:

"Reliability and Quality Assurance," T. Johnstone, Vickers Corp., Detroit; "NASA Reliability and Quality Assurance," J. T. Koppenhaver, director office of reliability and quality assurance, Hqs. NASA; "F-111 Weapon System," J. T. Cosby, GD/FW vice president and F-111 program director; "Corporate Procurement of High Quality Parts," W. G. Evans, corporate director of materiel; "Air Force Organization and Contractor Relations," C. C. Hargrove, deputy chief Air Force quality control, GD/FW.

"F-111 Maintainability," E. D. Mathis, manager of support requirements, GD/FW; "Quality Control of Technical Manuals," W. E. Magnuson, GD/Astronautics; "Industry Participation in Government Committees," E. S.

Winlund, GD/Astronautics.

"Product and Reliability Control at GD/Electro Dynamics," N. T. Bonner, GD/ED; "Product Data Processing Center," E. C. Cauthen, GD/FW process control supervisor.

E. R. Weiher, GD/FW manager of quality control, hosted the event; Frank W. Davis, GD/FW president, made opening remarks.

W. J. Martin, GD/Convair director of reliability, was named chairman of the quality control panel, replacing E. J. Behney, resigned.

Others attending the meeting were: John Holland, director quality control, GD/Electronics-Rochester; R. J. Cary, manager-engineering services, GD/Electronics-San Diego; H. L. McKeown, director quality control, Canadair-Montreal; C. W. Holden, manager, quality control and inspection, Stromberg-Carlson; T. Dunn, assistant general manager-reliability, Electric Boat; O. R. Goode, quality control manager, Electric Boat.

N. H. Simpson, director quality assurance, F-111, GD/FW; G. G. Sidaway, reliability engineer, Canadair-Montreal; J. C. Bear, chief of weapon systems reliability, GD/Pomona; J. W. Snodgrass, engineering manager-reliability, GD/Electronics-Rochester.

N. T. Bonner, manager of quality control, Electro Dynamic; K. Sinclair, manager quality assurance, GD/Electronics-San Diego; E. A. Cartwright, chief B-58 quality assurance, GD/FW; E. Gremley, division manager quality assurance, Vickers Inc.-Aerospace Division-Detroit.



IN SESSION — Representatives from most divisions attended Dynamics Panel on Reliability and Quality Control April 1-3 at GD/FW.

## General Dynamics Cited for Efforts In Equal Employment Opportunities

General Dynamics Corporation was one of 45 firms and organizations honored recently with Certificates of Commendation for equal opportunity employment practices.

The award was made by the Chicago Committee of One Hundred, a civic agency dedicated to social and economic progress.

Presentation was made during ceremonies at the Committee's

22nd annual dinner in Chicago early this month.

In a citation accepted by J. L. Budros, corporate director of compensation and personnel development, General Dynamics was praised for "observing the fundamental rights of equality of opportunity in employment, without regard to color, creed, sex or national origin."



"Now, don't you worry! If things on the job don't go right, you've always got me to come home to . . ."



VALUE CONCLAVE—General Dynamics men at corporate Value Control Committee meeting in Chicago, Ill., March 21-22 to discuss effectiveness of GD programs are (from left) W. G. Evans, GD director of materiel; W. B. Roberson and John W. Shaffer, both GD/Fort Worth; John Hill, GD/Electronics-Rochester; E. D. Heller, GD/Astro; M. M. Reeder, GD/Electronics-San Diego; John Lindsey, Liquid Carbonic; Frank Kohrs, Electric Boat; A. S. Ross, GD/E-Rochester; W. R. Feichtinger of BUWEPs, main speaker; E. H. Conklin, GD/Pomona; Ray Golemb, Stromberg-Carlson; H. P. Williams, GD/Convair; R. J. Nash, GD/E-Rochester. Karl Mikelsons of Canadair was unable to attend. In shot at right E. W. Feddersen, GD director of manufacturing engineering and chairman, greets Feichtinger.

## Booklet 'Sells' Value Control

GD/Fort Worth is "selling" value engineering throughout the U. S. through a 38-page booklet, "Value Control—the Practical Management Series."

Authored by Bill Nutt of educational services, the handy, easy-to-read effort is based on findings of some 20 value engineering seminars at GD/Fort Worth.

The illustrated booklet defines the philosophy of value control, lists step-by-step procedures for activating a value engineering plan, and presents case histories.

An estimated 8,000 to 10,000 of the booklets have been issued to a wide range of organizations—industry, universities, governmental agencies, branches of the Army, Navy, Marines and Air Force.

"We're pleased to pass along our value control experience to anyone who's interested," said Nutt, "since this technique has become a way of life not only with us, but with all our subsystems vendors."

Frank W. Davis, GD/FW president, wrote in the booklet's foreword: "Our acceptance and routine employment of Value Control . . . will largely determine the direction our future takes. In the future, only the low-cost producers can hope to have ever-increasing business on the books . . . we intend to be a low cost producer."

Copies of the booklet are available upon request to: Educational Services Section, General Dynamics/Fort Worth.

## Customers Leaning Toward Incentive-Type Contracts

General Dynamics members of the corporation's Value Control Committee, meeting in Chicago, Ill., last month, learned a new word—"incentivize."

W. G. Evans, General Dynamics director of materiel, told value control delegates from nine General Dynamics divisions that they will be hearing the coined word more and more as it is used to describe incentive-type military and government contracts.

He pointed out that the Department of Defense is placing increasing emphasis on "incentivizing" bidders for governmental work by selecting only those companies who toe the "value vs. cost" mark, as he discussed in detail the inclusion of Part 17 (Value Engineering) in Armed Services Procurement Regulation (ASPR).

W. R. Feichtinger, chief of value engineering for the Navy Bureau of Weapons, Washington, D. C., as main speaker at the March 21-22 session, played the spotlight on the prime position value engineering holds in DOD's present and future planning.

He quoted from a letter written by Secretary of Defense McNamara to President Kennedy which spelled out proposed reduction of the Department of Defense budget by \$3 billion over the next three years—primarily through application of value engineering principles within contracting companies.

E. W. Feddersen, GD director of manufacturing engineering and

chairman of the all-Dynamics committee, called members' attention to necessity for development of a sincere and realistic value engineering/value control consciousness within all GD divisions to meet and surpass value engineering requirements of the ASPR.

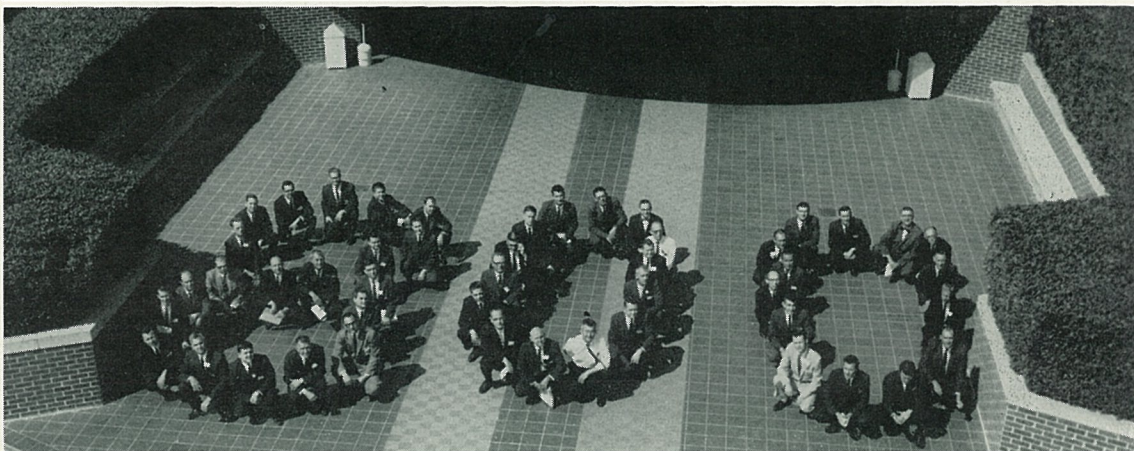
All of the 14 delegates who spoke during the two-day conference discussed various methods of attaining more efficient and effective programs within the company as a whole.

Only other speaker from without the corporation was W. G. McMurtry, formerly of GD/Fort Worth, who explained the value engineering organization which he has installed at Motorola, Inc., Military Electronics Division, Phoenix, Ariz., along similar lines as GD programs.

Feddersen appointed three subcommittees to expedite standardization of value control programs in all GD divisions and subsidiaries. E. H. Conklin of GD/Pomona will chair the subcommittee studying current GD value control organizations and framing recommendations for the ideal program to meet ASPR value engineering requirements.

E. D. Heller of GD/Astronautics is head of a group formulating a charter for the GD Value Control Committee.

Feddersen, himself, has assumed top responsibility of the third subcommittee which will search for means of calling attention to Dynamics' VE capability.



COST ENGINEERS—Graduates of 20th GD/Fort Worth value engineering seminar strike "800 pose" depicting number receiving VE sheepskins since program's inception.

## Graduates of Value Engineering Seminars at GD/FW Exceed 800

Over 800 persons have graduated from GD/Fort Worth value engineering seminars.

The milestone was reached at Seminar No. 20, held at GD/Fort Worth March 18-29 and attended by a record-breaking 46 people. Potential savings were reported as "substantial."

"Most of the graduates have been GD/Fort Worth personnel, with a liberal sprinkling of Air Force and vendor individuals," said Rand Creasy, deputy value control coordinator.

Attending seminar No. 20 by invitation were Capt. C. M. Leggett and R. P. Clevenger, Air Force Education With Industry officers on assignment at GD/Fort Worth; G. A. Wiley, W. A. Visage, and C. A. Schulz, Air Force Plant Representative's Office; C. W. Darby, Collins Radio; and Dr. G. G. Miller of TCU.

Also attending as special guests were G. V. Antonowicz, W. Janowski and T. F. Flynn of Grumman Aircraft Engineering Corp.

Dr. Miller is the first college faculty member to attend a GD/Fort Worth seminar.

Eight projects—many of them selected because of their similarity to upcoming F-111 functions—were studied. Projects and team members were:

Leg Guide-Data Stg.—W. E. Rater, 160; C. R. Crippliver, 260; D. O. Burch, 31; E. G. Ward, 287-3; Capt. C. M. Leggett, AF; and C. W. Darby, Collins Radio.

Flange and Tee—R. G. Jones, 160; H. D. Clark, 260; E. E. Creamer, 24-9; A. L. Hayter, 7-8; R. H. Allmond, 22.

Frame Assembly—M. Rowell, 61; L. C. Strange, 260; A. E. Unruh, 23-1; H. Ellis, 4-2; C. E. Spradley, 27; Dr. G. G. Miller, TCU.

Guard—C. W. Hill, 260; T. O. Finn, 062; C. C. Tittle, 24-1; W. H. Johnston, 16; Capt. R. P. Clevenger, AF; R. M. Crawford, 180-2.

Seal—E. C. Allison, 160; J. J. Harling, 260; C. A. Springer, 24-1; G. A. Babcock, 87-2; C. A. Schulz, AFPR; E. D. Weimer, 25.

Tube—W. E. Gray, 260; A. Noetzel, 160; J. A. Spitzenberger, 24-1; R. E. Fitch, 189; W. A. Visage, AFPR; V. V. Gilley, 24-8.

MTU Cover—C. B. Cox, 267-1; J. G. Damron, 165; W. D. Campbell, 24-1; D. R. Grimes, 4-2; E. J. Bielefeld, 28.

MTU Base—E. W. Foster, 065; L. MacMurdo, 160; J. E. Massie, 24-1; L. N. Slayton, 12; L. T. Clark, 29; G. A. Wiley, AFPR.





**ALL WINNERS**—Some of 66 General Dynamics youngsters selected to display projects in recent Greater San Diego Science Fair gather outside Balboa Park Conference Hall during judging. Twenty-eight of group were singled out for special merit during course of event.

## Dynamics Sons and Daughters Again Dominate Science Fair

General Dynamics sons and daughters were a dominant group again this year in the Greater San Diego Science Fair held last week in Balboa Park.

Sixty-six General Dynamics youngsters displayed their work at the Fair, with eight listed as sons or daughters of GD/Convair employees; two from GD/Electronics; 17 from General Atomic; and 39 from GD/Astro.

The Fair culminated months of scientific activity for the young entrants, all of whom were previously named winners in local school fairs.

Each had independently (or in some cases, as a member of a group) developed a scientific project, recorded data and results, and prepared a display to demonstrate their work. Scientists and educators from area colleges and industries volunteered their time to judge displays and counsel exhibitors.

J. R. Dempsey, GD/Astro president, served as chairman of the

Fair's board of governors, with J. A. Croft, chief of educational services, and Emory Thurston, serving on the Fair advisory committee.

General Dynamics scientists and engineers serving as judges included Dr. A. E. Adelson, Peter Baima, J. F. Brady, J. C. Breeze, O. W. Clausen, D. P. Germeraad, Dr. G. J. Goble, Dr. A. E. S. Green, Lester Harr, J. F. Haskins, D. P. Hoffman, Samuel Kaye and J. M. Maughmer of GD/Astro.

Others were Dr. R. F. Rolsten, W. J. Schart, E. W. Schwartz, Joan Sherley, R. S. Shorey, T. T. Tanalski, Dr. Alex Thompson, E. H. Wrench, and Dr. W. L. S. Wu of GD/Astro; and Don Pugh of GD/Electronics.

From General Atomic came Dr. Helmut Ehrhardt, M. A. Fineman, W. V. Godel, A. W. McReynolds, P. H. Miller, Dr. H. R. Snodgrass and Dr. R. F. Stebbings.

To Charles Getzoff, son of a retired GD/Astro employee, went a special ISA award, a Navy Cruise award, and a merit award (I) in electronics. General Atomic sons Stephen Borders and Gary Allen received a Scientific Equipment award and an Air Force award, respectively, while GD/Convair son Donald Atha received the Scientific American award.

For judging purposes, exhibitors were divided into junior (grades 7, 8, 9) and senior (grades 10, 11, 12) groups with top exhibits singled out for special merit awards. Twenty-eight General Dynamics exhibitors were honored with I, II or III ratings.

Listed with ratings and subjects were GD/Convair students Paulette Lockwood, (III) botany; Edward C. Hendricks, (I) math; Donald Atha, (I) medical science; and Julia Buchanan, (III) botany (group).

From General Atomic were Gary Allen, (I), and Sharon Wilkins, (II) medical sciences; Stephen Borders, (I), and Robert Snodgrass, (II) botany; Hugh B. Stewart, (I) chemistry; and William Kratz, (III) physics.

GD/Astro youngsters honored with merit awards included Theodor Tanalski, (I) electronics; Nancy Albers, (I), and Judith Ebers, (III) microbiology (group); David Bard, (I) botany (group); William Duerksen, (II) medical science; Doug Johnson, (II) zoology; John Harman, (II) astronomy; Jeffrey Greensite and Bob Fosse, (II) and Robert Brazell, (III) math.

Also, Bob Jaegly, John Valentino and Diane Sylvester, (II), and Thomas Utschig, Sandra Yoshida and Connie Taylor, (III) physics; Nancy Fisher, (II) chemistry; and Jon Mark Winlund (III) engineering.

## McClure to Address ASQC at Cal Western

J. Y. McClure, General Dynamics director of reliability and quality control, and P. I. Harr, GD/Astronautics director of reliability, will be featured speakers at the third annual seminar of San Diego Section, American Society of Quality Control at Cal Western University April 20.

Seminar subjects will deal with "Space Age Quality — Brought Down to Earth," said M. R. Seldon of GD/Astro, co-chairman with W. J. Wilkinson, San Diego Contract Management District, AF Systems Command.

Other speakers at the day-long event will be H. C. Todt of North American Aviation; Dr. L. W. Ball, Boeing Co.; and Rear Adm. R. M. Reynolds, USN, force material officer, COMAIRPAC.

Tickets, which include luncheon, may be obtained from ASQC boosters or H. H. Mischler, GD/Astro Plant 19 (formerly Plant 2), ext. 2715.

## Salvage Schedule Set For Divisions

Schedule for the next four weeks at GD/Convair and GD/Astro salvage yards for employee sales is:

GD/Astro—April 20, May 4.  
GD/Convair—April 27, May 11.

## Rally to Cover Scenic Route

April 21 is the day for the 1963 edition of ARA Sports Car Club's annual championship rally.

The event is open to everyone except members of the sponsoring Astro group, who administer the run.

First cars will roll at 6 a.m. from in front of the Bldg. 2 reception center at the Astro site. The rally will last about 8½ hours, and will cover approximately 300 miles.

The route is described as including "some of the most beautiful scenery in the state."

Rest and lunch stops are scheduled.

As prescribed by championship regulations, each car must be occupied by two persons—driver and navigator.

Entry blanks and additional information are available from J. A. McRae, GD/Astro ext. 4251.

## Two Thirds of Utility Cost Target Achieved

Thanks to cost-conscious employees and the special efforts of departments and groups, a utilities economy program at General Dynamics/Astronautics has attained 69 per cent of its goal in just seven months.

The 12-month goal is to cut at least \$200,000 off Astro's annual utilities bill.

In seven months savings of \$138,698 have been realized.

"The attention employees have given to this effort, especially during winter months, has been highly commendable," said W. J. Stanley, manager of plant engineering. "If this trend continues, we can realize and possibly exceed our set goal."

Individual help centers on turning off lights, power equipment, etc., when not in use, in seeing that all lights, etc., are shut off at the close of shifts and in keeping doors and windows closed when the heat is on.

Departmental participation includes this individual effort, plus special attention to operating

## Silver Service Prizes Put Up For Trap Shoot

Top guns from all points in Southern California will be shooting for silver service prizes at this month's ATA registered trapshoot sponsored by CRA-ARA Gun Club Sunday, April 28.

Such coveted awards as silver serving plates, chafing dishes, sugar and creamer sets will go to winners in Classes A, B, C, D of the 16-yard, 100-target division; first and second places, high lady and high junior in the handicap 100-target event; and winner of the 50 pair of doubles.

Registration will start at 8:30 a.m. at Gillespie Field Range, said CRA Commissioner Jack Swank, with competition getting under way at 10 o'clock.

Trapshooters will be able to get in a little extra practice for the monthly registered meets when the range is opened on Saturday afternoons from 1 to 5 p.m. First Saturday for open shooting will be May 4, after Daylight Saving Time goes into effect.

Two Convair men, Ed Barrett and George Clayton, scored 50 straight in the regular club trapshoot April 7. Both won a gun case for their skill.

Top rifle shot was Dave Farrelly of Astro who braved the wind to score 347 out of a possible 400 for the gold medal, said Bob Andrews, ARA Rifle Club commissioner. Gusts were so strong during shooting that often the shells wouldn't even hit the

## GD/Astro Son Wins Speaking Laurels

Another GD/Astro son, Patrick Mahoney, 16-year-old son of Stan Mahoney (Dept. 140-3) won a first place in his school competition in the recent Lions Club Student Speakers contest, and placed second in the El Cajon zone meet.

Marshall Hurlich, son of A. Hurlich, Dept. 592-1, finished second in the San Diego zone speak-off (GD NEWS, April 3).

Patrick, a sophomore at Granite Hills High School, El Cajon, represented the Bostonia Lions Club.

Individuals with suggestions to aid the program may contact Joe Dragonetti at ext. 3486.

## Instrument Society Votes Dynamics Men

W. R. Holmes of GD/Convair standards laboratory will be installed as president of the San Diego Chapter of the Instrument Society of America at the group's May meeting.

He has held chapter posts of vice president and member at large, and currently serves as national chairman of the organization and management committee of ISA's measurement and instrument division.

Other General Dynamics men chosen at the March meeting are Martin Kantor of General Atomic, vice president; three from GD/Astronautics—Charles Hill, recording secretary; Leon Schenke, treasurer; and Harry Norton, member at large.

## Application Blanks For Loans Available

Application blanks for loans at the new City Bank of San Diego, opened recently near General Dynamics/Astronautics main plant, are available through employee services office, Bldg. 8, Plant 71.

The new bank is located in the Fed-Mart building and is open from 10 a.m. until 8 p.m. on Monday and Friday, and from 10 a.m. until 5 p.m. on Tuesday, Wednesday and Thursday.

paper target, let alone the bull's-eye. Silver medal winner was Bill Prentiss, also of Astro, with a 344.

Luck picked eight other trap and skeet winners at the April 9 drawing: Warner Gatterman of Astro, game tote; W. Kantman, Astro, cufflinks; Lois Cullmer, flashlight; A. Kest, shooting gloves; Robert Beckett, hunting jacket; C. F. Thomsen and L. Nash, Convair caps; Arthur Salatin, shell holder.

## Astro Team Leads Volleyball League

Astro's Dynamics volleyball team led the American League, 2-0, after two weeks of IRC tourney play.

In first tourney matches March 27, Dynamics downed Untouchables, only other competing Astro team, by 15-11, 15-11, and went on the following Wednesday night to defeat California State Employees Association, 15-7, 15-7. Untouchables beat City Engineers the first week, 15-4, 15-12.

Ryan was on top of the National League, with GD/Electronics and Convair Hi-Lows trailing, 1-1. GD/Electronics dropped its first match in a hard-fought battle with Ryan, 15-4, 15-6, 11-15. Hi-Lows won on a forfeit by Park and Recreation Dept. Wreckers.

In second week play, April 4, GD/E defeated the Wreckers and Miramar took the Hi-Lows.

American League matches are played each Wednesday and National League, each Thursday, in Balboa Park's Muni Gym.

## SNOW SKI CLUB MEETS WEDNESDAY

A meeting of CRA Snow Ski Club will be held next Wednesday (April 24) at Torrey Pines Inn at 8 p.m. Final arrangements will be made for the group's annual trip to Mammoth Mt.



**SHUTTER STOPPER** — Astro's Virginia Mateja, Dept. 523-6, was one of three finalists in recent ARA queen contest to model for recent meeting of ARA-CRA Camera Club. Astro Lens' Gerhart Gross captured this pose.

## Astro Queens Pose For Club Lensmen

Three photogenic models and 40 enthusiastic cameramen crowded Balboa Park's Photo Arts Bldg. April 7 at a meeting of the joint ARA-CRA camera club.

Models were finalists in the recent ARA queen contest. Virginia Mateja, Eleanor Boisselle and Bonnie Simmons were photographed using club lighting and backdrop equipment.

At the group's next meeting, 7:30 p.m., April 21, a lecture, discussions and slide show on "What Makes a Good Picture" are planned, according to ARA Commissioner Ken Rinker.



# Sports & Recreation

## Sounds Like Fun! Explorers Heading for Remote Canyon

ARA Explorers Club members and their families plan a two-day field trip into a little-known canyon in the Las Millas area, Baja California, April 20 and 21.

Camp site will be Carisso Canyon, location of earlier Indian habitation.

Participants will rendezvous at

## Summer Keg Loops Begin Action May 12

Entry blanks for ARA-sponsored summer bowling leagues are still available at bowling establishments and employee services at Astronautics as the summer start date approaches.

All leagues begin rolling the week of May 12 and close the second week in August.

Leagues will meet at Clairemont Bowl on Tuesdays, Thursdays and Fridays for adults and Saturday morning for kids. Parkway Bowl will be active on Tuesdays, while Poway Bowl will feature a Wednesday mixed trio loop.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**ARCHAEOLOGY** — Meeting 7:30 p.m., April 24, ARA Clubhouse. Keith Pope will discuss "Underwater Archaeology."

**BASEBALL** — Prospective members of varsity team contact Don Sanchez, Plant 71 ext. 1810, or Bud Mecham, Plant 19 ext. 1523.

**CAMERA CLUB** — Meeting 7:30 p.m., April 21, Photo Arts Bldg., Balboa Park.

**CHORUS** — Rehearsals each Monday, 7:30 p.m., ARA Clubhouse.

**COIN CLUBS**—Coiners meet 7:30 p.m. today (April 17); second shift unit, 1:15 a.m., April 18, both in ARA Clubhouse. Swap night.

**DANCE**—"Spring Frolic," May 18, El Cortez Hotel. Tickets 75c each at employee services outlets.

**DISCOUNT TICKETS**—"Lawrence of Arabia," 2 p.m., April 28, Loma Theater. Tickets \$2.20 and \$1.80 at employee services, Bldg. 8.

**DRAMA**—Astro Players need backstage help with up-coming "Seven Keys to Baldpate." Meetings, 7:30 p.m., Wednesdays, ARA Clubhouse.

**EXPLORERS**—Field trip to Baja California, April 20, 21. Register with Herman Reichert, ext. 2607. Meeting 7:30 p.m. today (April 17), ARA Clubhouse.

**FISHING**—Salton Sea trip, April 27, 28. Reservations with T. B. Field, ext. 3284, or John Maxwell, ext. 1977. Meeting 7:30 p.m., May 1, ARA Clubhouse.

**GOLF**—Entries for IRC tournament accepted through April 22 at employee services outlets. Play May 4, 5, 11 and 12, Torrey Pines and Balboa Park. Fee, \$1.50.

**HI-FI/MUSIC**—Meeting 7:30 p.m., April 24, ARA Clubhouse. Reini Braun: "All About Tape Recorders."

**ICE SKATING**—Mission Valley Ice Plaza. Skating 6:30 p.m. each Thursday.

**RADIO CLUB**—Meeting 7:30 p.m., April 24, ARA Clubhouse. Planning for June Field Day. Club picnic May 18.

**SPORTS CARS**—Championship Rally, April 21. Entry blanks from Jim McRae, ext. 4251.

**TEEN CLUB**—Two bands at dance, 7:30-11 p.m., April 20, ARA Clubhouse. Admission, 25c per person. One guest per member.

Guadalupe Canyon turnoff on Mexico Route 2 at 10:30 a.m., April 20, and proceed to the camp site by driving south across a dry lake (Laguna Salada).

Cars will be left at the canyon entrance, with the group traveling via ARA power wagon and other four-wheel drive vehicles from this point. Weekend plans include scouting for petroglyphs (rock carvings), climbing practice, survival instruction, and a campfire sing.

All field trip participants must register with Herman Reichert, trip officer and ARA commissioner, ext. 2607.

Also on Explorers Club schedule are a general meeting and election of officers 7:30 p.m. today (April 17) in ARA Clubhouse, and a trip to an abandoned copper mine in northern San Diego County April 28.

## Grindstaffs Win Bridge

North-south winners in special Master Point play during an ARA Bridge Club session earlier this month were Mr. and Mrs. Bert Grindstaff, with Jessie Morris and Dorothy Baily taking east-west honors in Section A.

Section B winners (north-south) were Mr. and Mrs. John Donan, while H. H. Johnson and Charles Myrose won east-west.

During final play in March, S. J. Rose and Art Saastad were north-south winners, Section A, and A. J. Johnson and Guy Merrill won east-west. In section B, Ann Stephens and Mary Saastad won north-south with Mr. and Mrs. Charles Thomas, east-west.

The club meets each Friday at 7:30 p.m., with play open to all GD/Astro employees and their families.

## TAPE RECORDERS LECTURE SUBJECT

"All About Tape Recorders" is title of a discussion to be conducted by Reini Braun at the April 24 meeting of ARA Hi-Fi/Music Club, 7:30 p.m. in ARA Clubhouse.

ARA Commissioner Ben Lachance described the presentation as highly informative, not too technical, and of value both to present and prospective recorder owners.

A demonstration will accompany the lecture, to which all GD/Astro employees and their families are invited.

The club has announced advance plans for a hi-fi component "swap, buy or sell" session to be held the first Friday of each month in the group's ARA Clubhouse studio. Free sessions will be open to all employees, with the first scheduled for 7:30 p.m., May 3.

**Bob Nicholas Named 'Diver of the Year'**

Bob Nicholas has been named "Diver of the Year" by Astro Divers, ARA skin diving club, having led the field of club members in accumulated points earned during 1962 competitions.

The club has also installed new officers with Rod Johnson taking the reins as president. Vice president is Gene Scarse, with Kari Titland, secretary, and George Clark, treasurer.

Cliff Kickbush is ARA Commissioner. Twenty-five Astro Divers took part in a recent club boat trip to the Coronado Islands for a day of SCUBA and skin diving, and spearfishing.

## Club Selects Mystery Play

Selection of a spring production and election of new officers has been announced by Astro Players, ARA drama club.

The group will present "Seven Keys to Baldpate" by George M. Cohan, May 9-11, 18, 19, 24 and 25. Ron Shapiro will direct.

Joe Tricoli heads the club as president this year, with Annabel Audet, vice president; Pat Givens, treasurer; Mary Ball, recording secretary; and Phyllis Silva, corresponding secretary.

An executive council consists of Julius Rose, technical director; Al Varon, production manager; Suzy McEntee, script committee chairman; Shirley McLaughlin, publicity chairman; and Gretchen Hart-Poindexter, membership chairman.

The club holds a business meeting at 7:30 p.m. the first Wednesday of each month in ARA Clubhouse. On other Wednesday evenings a drama workshop is conducted, dealing with demonstrations and lessons in all aspects of the theater.

Astro Players' activities are open to all GD/Astro employees and members of their families.

Back-stage help is now being sought for "Seven Keys to Baldpate," with work parties held each Saturday morning.

## 'Has-Beens' Again Plant Champs

"Has-Beens" aren't.

For the second time in as many years, the team, captained by Manny Gomes, Dept. 672, have captured GD/Astronautics' plant basketball title.

This year eight departmental teams took part in leagues playing Mondays and Wednesdays, with four more units making up a Saturday league.

Monday league winners, "Test Labs" with Bob Tuttobene, Dept. 564, captain, lost to "Commandos," Wednesday league champions, captained by Chuck Taylor, Dept. 120, in the first round of the finals.

In the championship game, "Commandos" lost to "Has-Beens," Saturday league champs.

Members of the winning team are Gomes, John Glover, Ed Gray, Fred Todd, Bill James, John Johnson, Charles Ladsen, Howard Argrove, Earl Hunt, Gary Caito and Bill Tessereau.

## Dixie Flora Named To a Second Term

Dixie Flora was named to a second term as president during recent elections conducted by Astro Notes, ARA choral group.

Other officers are Jim Pate, Dept. 210, vice president; Pat Aguilar, Dept. 451, music librarian; and Louise Okey, secretary-treasurer. Al Phillips is ARA commissioner.

Astro Notes meet each Monday at 7:30 p.m. in ARA Clubhouse, with all interested GD/Astro employees and dependents welcome to attend.

During 1962 the group filled 18 singing engagements, including participation in a benefit musical comedy, Christmas caroling at area hospitals, and a recent appearance at Armed Forces YMCA.

Recently organized within the club are a barbershop quartet and a women's trio.

## ARA Archers Slate Organizational Meet

With spring, ARA's Archery Club, dormant in recent months, may burst forth with renewed activity as result of a meeting at 7:30 p.m., April 24 in ARA Clubhouse.

ARA Commissioner Al Stone has encouraged all GD/Astro employees and dependents interested in archery to attend. The movie "Bowfishing Fun," will be shown, and reorganizational plans will be made.



**BLOOMING BEAUTIES**—Janet Flinn (Astro Dept. 324-7) adds her beauty to bursting glow of roses nurtured by ARA Garden Club Commissioner Everett Henderson for coming joint ARA-CRA Annual Rose Show this Sunday (April 21) at Floral Association Blvd., Balboa Park.

## Anglers to Vie At Salton Sea

ARA Fishing Club will sponsor another of its popular trips to Salton Sea, April 27 and 28, with reservations now being accepted by ARA Commissioner T. B. Field, ext. 3284, and John Maxwell, ext. 1977.

Maxwell is new president of the group, with Ed Bourgeois, vice president, Roger Killam, secretary, and Otto Wismer, treasurer.

Highlight of the trip will be a fish fry at 6 p.m., Saturday, with fishermen bringing their cleaned catch to Salton City Marina pavilion. Salad and beverages will be furnished by the club.

The club will award three trophies for Salton Sea catches. Fish should be witnessed and weighed before cleaning, with a weigh-in slip submitted.

A change in meeting schedule will result in club sessions being held the first Wednesday of each month. Next will convene at 7:30 p.m., May 1, in ARA Clubhouse. The movie, "Outboard Fisherman, USA," will be featured.

## Sailing Club Elects Shotwell Commodore

ARA Sailing Club, operating informally since late last year, was formally organized with election of officers at an April 1 meeting.

Heading the group as commodore is J. J. Shotwell, Dept. 662-9. E. I. Wissner, Dept. 148-0, is vice commodore, H. E. Mayer, Dept. 526-2, secretary, and Dick Moyer, Dept. 954-2, treasurer.

Club's purpose is to promote sailing among GD/Astro employees and their families. Effective May 1, Sailing Club members will receive boat rental discounts upon presentation of membership cards at Mission Bay's Vacation Village.

Other plans include instruction for beginners, organization of competition, and assistance to boat builders.

Next meeting of the group is at 7:30 p.m., May 6, in ARA Clubhouse.

## New Intermediate Dance Class Slated

Plans for a new intermediate ballroom dancing class under ARA sponsorship are being formulated this week, according to Ludy Moeller, ARA commissioner.

The class will meet for the first time May 13 and continue for 12 weeks with instruction from 7:30 to 9 p.m. each Monday in ARA Clubhouse.

Cost will be \$9 per person. Professionals will teach the latest steps to all who have completed a recent beginner's class. No advance registration is planned.

## Coiners Will Meet For Swap Session

Tonight (April 17) is "swap night" for members of Coiners, ARA's first shift coin club, when they gather at 7:30 p.m. in ARA Clubhouse.

V. L. Bacon, Dept. 965-3, new ARA commissioner, said displays and door prizes are also planned, and that a free uncirculated coin will go to each person attending.

A few hours following this meeting, Second Shift Coin Club will meet for a movie, displays and a swap session, beginning at 1:15 a.m. (April 18).

## Trailers Join Border Rally

Twelve trailers represented Astro Travelers, ARA trailer club, at the Border District Travel Trailer Club of America rally April 5-7 at Blair Valley, Anza-Borrego Desert State Park.

Highlights included a tour of an earthquake fault conducted by the park naturalist, and a campfire program Saturday evening.

New officers of the Astro group were installed April 2 in ARA Clubhouse. President for 1963 is Virg Marshall, with Fred Schulz, vice president, and Mike DiBiao, secretary-treasurer. Ray Parga is ARA commissioner.

Gus and Kathe Arends presented a program of slides taken on their recent trip through the western U.S. and Canada.

Information about Astro Travelers is available from Marshall, ext. 3542, or Parga, ext. 3805.

## 'Spring Frolic' Dance Scheduled May 18

Another of ARA's popular dances has been scheduled for next month with tickets now available at employee services outlets.

Dubbed "Spring Frolic," the event will be held in the International Room, El Cortez Hotel, May 18.

Dancing from 9 p.m. to 1 a.m. will be to music by Buster Carlson and his Astro band, and intermission entertainment is planned. Admission is 75 cents per person.

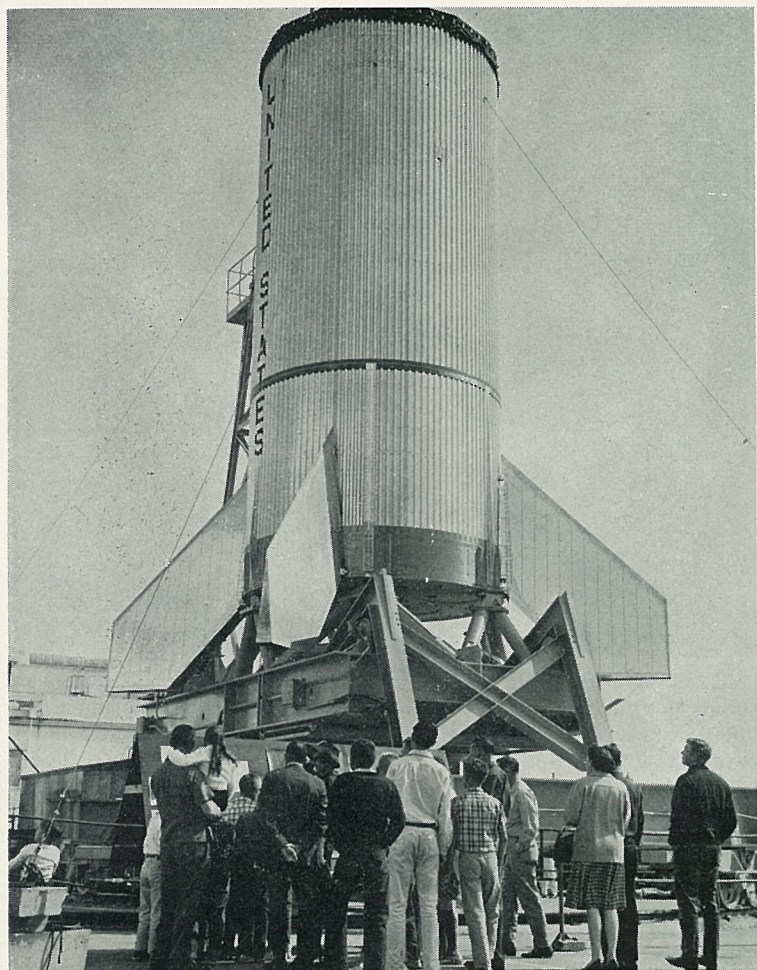
## Keith Pope to Talk On Yucatan Jaunt

Keith Pope, Dept. 322-2, will be guest speaker at the April 24 meeting of ARA Archaeology Club, 7:30 p.m. in ARA Clubhouse.

With "Underwater Archaeology" as his topic, Pope will describe his participation in the 1960 CEDAM Expedition to Yucatan, during which artifacts were recovered from the wreck of the merchantman El Mantenceras, sunk about 1728.

All GD/Astro employees and families have been invited to attend.





**FIRST LOOK**—Over 700 GD/Convair men, women, and children turned out for a look at the first Little Joe II launch vehicle, assembled on its launcher in Plant 1 experimental yard, at a special open house for families late last month.



**PATIENT WAIT**—During 5,000-mile trip through Mexican interior GD/Astro's Tom Mahnken encountered this ancient ferry far south of Mexico City. This was exception to normally good roads covered in trip that almost reached Guatemala.

### 13-Day Jaunt

## GD/Astro Photog Drives Deep Into Mexico on 5,000 mi. Trip

Baja California may be Mexico to Californians, but few residents south of Mexico City have ever heard of it!

This was one of many impressions brought home from a 5,000-mile, 13-day drive through Mexico made by General Dynamics/Astronautics photographer Tom

### Astro's Deane Davis Represents Industry

Deane Davis, chief design engineer—Centaur, General Dynamics/Astronautics, represented the aerospace industry during the University of Colorado's World Affairs Conference last week.

It was Davis' fourth consecutive appearance in the week-long event which drew 80 invited guests representing every business and professional group and including four ambassadors of foreign nations.

Panels debated and discussed current topics before student groups.

### Charitable Groups Divide up \$1,000

Donations approved by GD/Convair Employees' Con-Trib-Club Committee this month divided \$1,000 between two charitable groups.

Pathfinders of San Diego, Inc., will receive \$500 and an equal sum will go to Muscular Dystrophy Associations of America, Inc.

Mahnken.

Other memories include areas where no one understands Spanish (just Indian dialects); contrasting scenery from deserts to jungles, mountain peaks to white coral beaches; and such delicacies as turkey stuffed with black beans; and red snapper and garlic soup.

Mahnken drove the entire distance in his Land Rover, covering one 1,700-mile stretch in 24 hours. Two companions navigated.

The trio crossed into Mexico at Mexicali and followed a little-used route to hit the west coast highway that carried them to Mexico City. They climbed over 9,000-foot mountains, then dropped to Veracruz on the Gulf of Mexico. They followed the Gulf to Yucatan city of Merida, backtracked and dropped down to the Pan American Highway 150 miles north of Guatemala. They followed this route to Mexico City, moved north to Durango and then back to the west coast. All of this in 13 days!

While they stuck to major highways during the day, they moved into remote areas at night, camping out five of the nights they were away.

Only trouble on the trip was a burned-out valve and a replacement was flown to him from Mexico City. The cost, surprisingly, was nominal. In fact, the trio spent just \$300 during the entire trip, of which \$80 was for gas.

### California to 'Lose' One Hour April 28

Days will be longer—or seem that way—for Californians when Daylight Saving Time goes into effect again the last of this month.

General Dynamics people in California will turn clocks ahead one hour the last Sunday of the month (April 28).

The time change affects divisions in San Diego, Pomona, and off-site facilities.

### Nights in Open

## Two at GD/FW Survive 3-Day 'Crash' Drill

"Don't throw anything away—everything can be used for something."

The advice came from GD/Fort Worth flight department's W. E. Denton and Grover Tate following a recent three-day survival exercise in rugged back hill country near Gordon, Texas.

True to their own counsel, the durable pair used virtually everything in their survival kit, plus many items of nature—including toothbrushes made from willow twigs.

The B-58 navigator and DSO were blindfolded and released at night some distance apart.

There followed three days and nights of foraging for food and water—and protecting themselves from the elements (temperatures at night dipped to near-freezing). "Paratents" were made from parachutes, with life rafts for mattresses.

"Later, we had to spread the parachutes to aid the rescue crew in 'finding' us," Tate said.

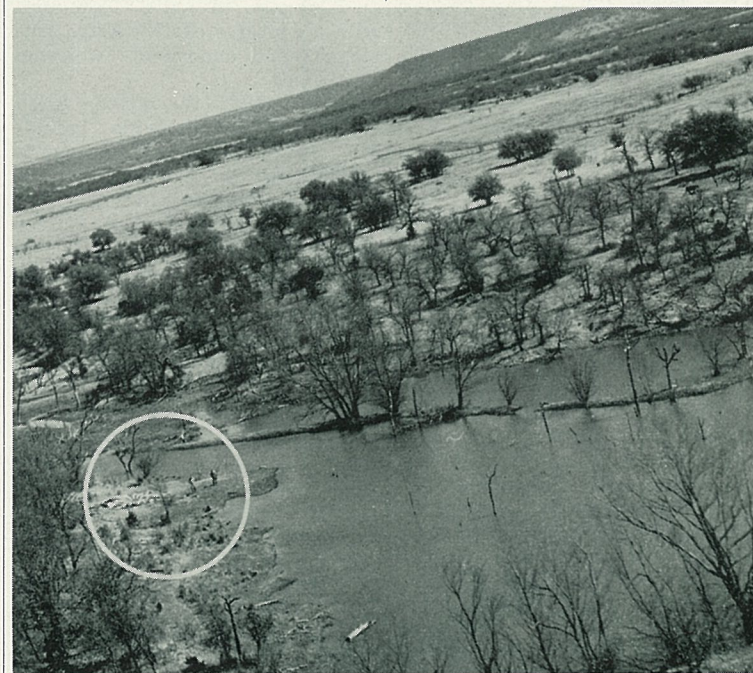
Besides survival-kit rations, the men used a gill net to catch perch and catfish, which they roasted on a spit. Both got their first taste of armadillo. It was "a bit dry and stringy . . . but edible."

Forewarned of the possibility of mountain lions, both were relieved the first night when a "loud crackling in nearby brush" turned out to be cows.

The B-58 crewmen emerged in good shape physically, with the following additional recommendations to airmen who bail out over similar terrain:

Know your equipment thoroughly; dress for the most extreme weather that you would likely encounter along your flight path; carry a candy bar or two in your pockets; eat well before your flight; make a shelter as soon as possible.

Also, check each piece of equipment before you try to use it; make a blanket with some type of insulation (leaves, grass, paper) or your parachute; keep size of fire small in dry country; catch only as many fish as you need—or cook and smoke them for later use; rest is as important as food—provide for it as you would food; find water first and food later.



**IN THE WILDS**—"Rescue" plane spots spread parachutes of GD/FW's W. E. Denton and Grover Tate, practicing survival in Texas back country.



**BRAZIL BOUND**—First Varig 990A wings off from GD/Convair flight line on schedule early April 3 on delivery flight to Porto Alegre, Brazil. Below, W. D. Carrier, GD/Convair pilot, and Capt. O. Silveira of Varig point out route from California to South America. Others of flight crew are C. J. Falkenthal, GD/Convair flight engineer; Varig's M. Kern, flight engineer; Capt. B. Scalabrin; F. Petersen, flight engineer.

## First of Varig's 990As Delivered to Brazil

First of three 990A jetliners to move out of General Dynamics/Convair this month for Varig Airlines of Brazil arrived at the South American city of Porto Alegre April 4 after an overnight delivery flight.

The advanced version Convair jet transport, piloted by W. D. Carrier of GD/Convair and Capt. O. Silveira of Varig, took off a few minutes before its appointed departure time of 7 a.m. April 3.

First leg of the flight took plane and passengers from San Diego to Panama City where they spent the night. Next day took them to Lima, Peru, and across the Andes to Porto Alegre, Varig's jet transport base of operations.

Other flight crew members on first delivery were C. J. Falkenthal, GD/Convair flight engineer; Capt. B. Scalabrin; M. Kern, and F. Petersen, flight engineers, all of Varig.

Second Varig 990A was due to go out of San Diego late last week and a third Convair jetliner is scheduled for delivery before the end of the month.

Flight crew on the second craft were A. P. Wilson, GD/Convair pilot; Ludy Knudsen, GD/Convair flight engineer; Varig Capt. Renato Contins and Murilo Alvares; Gilberto Salger, flight engineer;

Victor Martinewski, navigator; Ivo Silveira, radio operator.

P. H. Selby, GD/Convair flight training supervisor, accompanied the flight for consultations on training at Porto Alegre and Rio de Janeiro, and Viasa's headquarters at Caracas, Venezuela.

George Pohlman and Ed Griffin of customer service are assigned to Varig as field service representatives to direct maintenance training. Tex Ashmore, field service representative, will fly 990As during the first two months in actual passenger service to oversee maintenance operations at the various stops.

The first 990A will probably go into service about the first of June from Rio de Janeiro to Los Angeles, said C. B. Edmonds, Varig's International Division maintenance manager, at GD/Convair during delivery of the airline's Convair jet craft.

### GD/Convair and Varig Men Hold Reunion

Two small town "boys" had an unexpected reunion at GD/Convair over 20 years and thousands of miles distant from their home town at Lincoln, Mo.

GD/Convair's H. W. Balke and Varig Airlines' C. B. Edmonds came face to face for the first time in 23 years when Balke walked into Edmonds' office to present release papers for Varig's first 990A. With one look and one voice they echoed, "Haven't I seen you some place . . . ?"

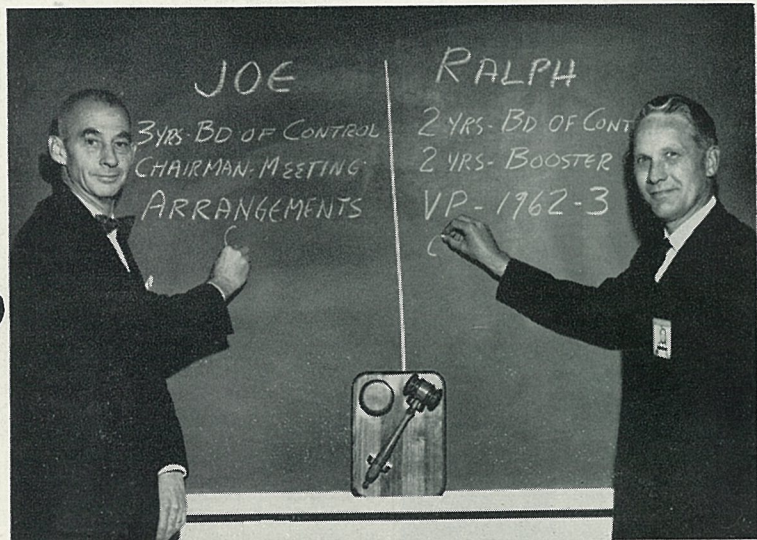
Balke, responsible for commercial transport inspection and customer coordination at GD/Convair, and Edmonds, maintenance manager of Varig's International Division headquartered at New York City, both grew up and attended school in the small Missouri town.

### TWA's 880s Pass 100,000 Air Hours

Trans World Airlines is the first airline to pile up over 100,000 hours of flight time with Convair-built jet transports.

As of the first of March the 20 Convair 880s flying under TWA colors had spent 100,730 hours in the air since the first TWA 880 was put into operation two years ago. Each TWA 880 now averages 6.9 hours in service every day.





**CHECK LIST**—Presidential candidates for Astronautics Management Club, Joe Stafford, left, and Ralph Bauman, list their qualifications and past services. Voting is in progress for all elective offices and winners will be presented at May 15 meeting.

### Humphrey to Head Astro Survey Team

Creation of a new management survey team and appointment of Albert S. Humphrey to head it as manager have been announced at General Dynamics/Astro by F. J. Traversi, vice president—administration.

This team will help Astro to improve its management techniques and efficiency in all departments and is the first organization of its type in the aerospace industry, Traversi said.

Prior to joining Astro, Humphrey was manager of market planning and services at P. R. Mallory Co. He holds master's degrees in business administration (Harvard) and chemical engineering (Massachusetts Institute of Technology) and a bachelor of science in chemical engineering from University of Illinois.



A. S. Humphrey

### Ralph Bauman, Joe Stafford Seek Office

Astronautics Management Club is in the midst of its annual election effort to select officers for the coming year. Those elected will be presented at the May 15 meeting.

Heading the list are presidential candidates C. Joe Stafford, traffic general supervisor, and Ralph T. Bauman, general foreman, Dept. 756.

Both are charter members and club leaders. Stafford is completing his third year as a Board of Control member and has headed the all-important meeting arrangements committee. Bauman, now vice president, has served a two-year Board term and for two years was chairman of the booster committee. He was also a Junior Achievement adviser.

Tom F. McCubbin and C. Larry Hartshorn are candidates for first vice president, while George C. Congdon and Jack A. Croft are running for second vice president.

(Continued on Page 2)

### Harbert Heads New Customer Service Dept.

General Dynamics/Astronautics has dropped an old name (product support) in favor of a new one (customer service) and appointed a new director (Raymond C. Harbert) to head it.

Details of the change were announced recently by E. D. Bryant, vice president—operations.

E. A. Reynolds, formerly director of product support, has accepted an executive position with General Dynamics Corporation.

Bryant explained the change to customer service is "an indication of the increasing importance of strong support of customer requirements in the field."

"In the maturing aerospace industry there exists a greater demand to satisfy the needs and requirements of the customer," Bryant said.

"It is with this definition in mind Astronautics has established a department where the customer can get immediate assistance and solutions to his problems, no matter how complex." Reporting to Harbert will be 1,958 employees formerly in product support functions.

Harbert earned a BSEE degree from the University of Santa Clara in 1951. At one time he owned and operated his own electrical contracting firm.

Joining Astro in 1960, Harbert was first chief of operations then base manager during activation of Dyess AFB, Tex., Atlas facilities. He received the "Commander's Award" and was praised for completing the Dyess tasks at a lower cost than any other "F" series base.

He has been assigned to the AWS project office for the past four months.



R. C. Harbert

### Boggess Goes To New Post

L. H. Boggess, 22-year General Dynamics veteran, has been named to a new executive post at Astronautics, while H. A. Nelson, formerly of GD/Fort Worth, takes over estimating.

Details of the changes were announced by E. G. Hill, controller. Boggess becomes manager of



L. H. Boggess

H. A. Nelson

financial analysis, a new position, while Nelson is manager of estimating. Both report to H. E. Lee, assistant controller.

Boggess joined Convair in 1941 in a factory job, moving later to tooling in a planning capacity and in 1949 shifted to budgets. Since 1951 he has been involved in estimating, rising from an estimator to supervisor and then chief of estimating when the Atlas program got under way. He has held the top Astro estimating

(Continued on Page 2)

## Logistics Moves To Rose Canyon

A series of relocations involving several major departments got under way last month at General Dynamics/Astronautics and is scheduled to continue through mid-October.

The new plan incorporates several changes from arrangements announced previously, as result of continued studies by plant engineering and departments concerned.

Primary factors necessitating change include the tremendous growth of the Centaur project; compensation for manpower adjustments in several groups; requirements for laboratory space in the division's expanding research and development programs; and a need for further consolidation of project organizations.

The move series was triggered in mid-April with the shift of support logistics (Dept. 330) to Rose Canyon from Plant 19 (formerly GD/Convair Plant 2).

At about the same time, GD/Astro vacated the Fordham Bldg.

By late this month, Atlas Weapon System project, with exception of manufacturing operations, will center in Bldgs. 2 and 4 at Plant 19.

Significant consolidation of GD/Astro support departments is also scheduled, with support engineering (Dept. 324), support publications (Dept. 322) and support quality assurance (Dept. 140-3) centering in the Plant 1 area.

At Plant 71, up-coming moves will result in the following picture by late this year:

Bldg. 1. Floors 1 through 3 will continue with present occupancy. Other departments in this building include the controller's organization and plant engineering.

Bldg. 3. Contracts (Dept. 110) and configuration management (Dept. 151) will occupy the first floor; engineering administration and legal department (including the patents group now in Bldg. 19) on the second floor. Dynamics (Dept. 541) will locate on third floor, which, with the fourth level will be consolidated on the fifth

### New Bus Routes Put in Service

New bus routes have been placed in service by Astronautics' transportation department, adjusting to shifts of personnel.

At the same time cancellation of the old Fordham Bldg. service was announced.

New routes connect Plant 1 and Plant 19 (formerly Plant 2) with Rose Canyon and also the main Astronautics plant (71) with Rose Canyon.

From Plant 1 service begins at 7:30 a.m. and continues on the half-hour until 2:30 p.m. Stops are made at Plant 19 approximately five minutes later en route to Rose Canyon. Return from Rose Canyon is on the hour from 8 a.m. through 3 p.m.

From Plant 71 the first Rose Canyon service begins at 7 a.m. From 8:30 a.m. until 3:30 p.m. westbound service is on the half-hour and eastbound service on the hour.

As a service to employees riding public transportation, special stops are made at the corner of Balboa Ave. and Morena Blvd. at 7:30 a.m. and 4:30 p.m. only. Final return trip from Rose Canyon departs at 4:20 p.m. to make the latter stop possible for connections.

and sixth floors, as will the NOVA study group.

Bldg. 4. Space will be vacated to accommodate several new laboratory facilities scheduled for installation this year. Other occupants will include engineering test laboratories, engineering administration, data systems, and data processing. Existing service organizations will remain in present locations along the building's north side.

Bldg. 5. Present production operations will remain, with factory support occupying office areas.

Bldg. 33. In addition to existing electronics production, other occupants are the Space Launch Vehicle project, electronics, and engineering development design.

### Off-Site Airlift Hours Changed

Airlifts supporting General Dynamics/Astronautics off-site operations changed some time schedules this week following the switch to Daylight Saving time.

The C-118 to Cape Canaveral now departs the GD/Convair north flight gate at 6:30 p.m., stopping in Denver and arriving at Patrick AFB, Fla., at 7:30 a.m. Return flights depart Patrick AFB at 11 a.m., arriving in San Diego at 8:35 p.m. Eastbound flights are on Sunday, Wednesday and Friday while westbound flights operate on Monday, Thursday and Saturday.

Pacific Airlines' flight to Vandenberg AFB, daily Monday through Friday, now departs Lindbergh Field Terminal at 7:15 a.m., arriving at Vandenberg at 9:12 a.m. Return flights depart at 5 p.m. and arrive in San Diego at 6:45 p.m.

There is no change in the airlift linking San Diego, Norton, Edwards and Vandenberg AFBs Monday through Friday. Northbound, it leaves San Diego at 7:45 a.m.; Norton at 8:40 a.m.; Edwards at 9:25 a.m. and arrives at Vandenberg at 10:25 a.m. Southbound departures are at 3 p.m. from Vandenberg; 4 p.m. from Norton; with arrival in San Diego at 5 p.m. This service departs and arrives at the Convair north flight gate. Southbound flights do not stop at Edwards.



**GIFT** — R. H. Biron, left, General Dynamics vice president, presents Corporate gift of \$65,000 to Paul Wolcott Jr., 1962 campaign vice chairman of United Community Services Fund. Check was pledge in behalf of all Dynamics operations in San Diego area.

### Harness Tray Fixtures Result Of Material Handling Teamwork

Teamwork — interdepartmental effort — has received heavy emphasis in General Dynamics/Astronautics' continuing campaign to maintain and improve material handling techniques.

One "success story" to come from the effort is seen in the development of harness tray handling fixtures now in use in the electronic manufacturing area of Bldg. 33.



**IN USE**—Cynthia Hogan works on autopilot harness tray held securely in handling fixture to prevent damage during assembly, storage and transportation.

Here, representatives of four departments teamed to design and produce the fixtures, used to protect complex autopilot harness trays during fabrication and storage.

The unwieldy trays require considerable handling during wiring and assembly, and later as portions are encapsulated in plastic foam. During these processes, every effort must be made to prevent damage to delicate electronic components.

Spotting the problem, J. M. Jack and Roger Pierson (tool planning and liaison, Dept. 401 and 402); E. P. Cormier (packaging and component development, Dept. 558); H. D. Brown (electronics production, Dept. 781); and J. J. Perecko (material handling engineer, Dept. 290-1), "put their heads together and developed" the 30 fixtures (10 each, in three sizes) with stands, now in use.

Trays are locked in the frame-like fixtures, and harness plugs are accurately positioned in capped receptacles.

Trays remain in the fixture for "foaming" and baking, and even afterward for damage-free storage and transportation.

Five material handling Action Task Groups (General Dynamics NEWS, April 17) are now in operation throughout GD/Astro seeking out other problem areas.



## Bazler Will Direct Exec. Development

Paul S. Bazler has been named executive development administrator at General Dynamics/Astronautics by M. V. Wisdom, director of industrial relations.

Bazler has been with Astro since May, 1961, in base activation, serving most recently as a project coordinator.

P. S. Bazler A former student at Ohio State University, the U.S. Navy Post-Graduate School and the Industrial College of the Armed Forces, Bazler retired from the Navy in 1961.

## Log Book Entries



E. F. Miller, Dept. 480-0, is latest at GD/Astro to receive 25-year service emblem.

## Papers Presented

GOOD—Robert J., Dept. 596-3. "Contact Angle at the Gallium Mercury Interface on Glass," American Chemical Society, Los Angeles, April 1-5.  
GREEN—A. E. S., with LINDENMEYER, C. S., Dept. 596-0. "Molecular Absorption in Planetary Atmospheres," AGU, 44th annual meeting, Washington, D.C., April 17-20.  
GREEN—A. E. S., with LOWEN, R. W., Dept. 596-0. "Generalizations of the Chapman Function," AGU, 44th annual meeting, Washington, D.C., April 17-20.  
HINCK—R. C., Dept. 565-3. "Atlas and Centaur Development Test Programs," University of Wisconsin, March 27.  
WILSON—P. E., with SPIER, E. E., Dept. 592-3. "Numerical Analysis of Small Finite Axisymmetric Deformations of Thin Spherical Shells," AAS Structures and Materials Conference, Palm Springs, April 1-3.  
YOSHIMURA—Hideo, Dept. 596-7. "Transonic Aspects of Hypervelocity Rocket Plumes," AGARD Meeting, London, England, April 1-5.

## Retirements

RIGNALL—R. P., Dept. 571-2. Seniority date, Feb. 3, 1958. Retired Feb. 8.  
VAN HORN—Artie, Dept. 835-3. Seniority date, June 7, 1948. Retired March 29.  
WHITNEY—R. K., Dept. 377-1. Seniority date, Feb. 6, 1933. Retired March 1.

## Births

LOWE—Daughter, Julie Rae, 8 lbs., 1 3/4 oz., born March 18 to Mr. and Mrs. J. P. Lowe, Dept. 684-5.  
PASTOR—Son, David George, 6 lbs., 8 1/2 oz., born April 11 to Mr. and Mrs. George Pastor, Dept. 953-3.  
ROSE—Daughter, Lori Kay, 9 lbs., 2 oz., born April 5 to Larry (GD/Convair Dept. 6) and Karen (GD/Astro Dept. 960-1) Rose.  
YARDUMIAN—Son, Robert Norman, 8 lbs., born March 4 to Mr. and Mrs. Joseph Yardumian, Dept. 684-5.

## Deaths

SHEERAN—Earl W., Dept. 860-0. Died April 17. Survived by wife, Edith, two sons.

## Personals

**MAIN PLANT**  
We take this means to thank the many friends from General Dynamics for all of their thoughtfulness and kind expressions of sympathy in the recent loss of our loved one.

The family of  
George E. Coffman (Fort Worth).

We deeply appreciate the many kindnesses shown us upon the death of our husband and father.

The Claude Gannaway family.

The expressions of sympathy extended to myself and my family on the recent loss of our daughter, Sandra, are greatly appreciated.

J. R. Cook, Dept. 965-3

# General Dynamics NEWS

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## I Would Like to Recommend . . . . .

Complete this form and give it to your supervisor. He will forward it to R. M. Smith, Dept. 130-90, Plant 71 (San Diego).

Recommended by

Dept.

Ext.

If we contact this individual, may we use your name as the person who recommended him?

.....yes .....no.

Name

Tel.

Address

(City)

(State)

His experience is in the field of.....

## Training Sessions To Precede Adoption Of New EDARR Form

Two-hour training sessions for upwards of 1,000 General Dynamics/Astronautics employees are now in progress in conjunction with pending revision of a much-used document.

About June 7 Astronautics will introduce a new Engineering Drawing and Assembly Release Record (EDARR) form. It will be quite different from current forms used by both engineering and production personnel.

Early this week (April 29) educational services began the first of a series of training classes to acquaint frequent users of the EDARR form with the new format and to help them interpret data it contains.

Supervisors of all functions involved are requested to review their personnel to determine those requiring training. They may contact Gloria Hays, ext. 1935, to submit names, department and telephone numbers of those selected for the course. Supervisors will be advised of class schedules for their personnel.

Employees working at off-site locations in the San Diego area will attend sessions conducted at Plant 71.

## GD/Astro Sponsors Honor Math Contest

Ranking advanced mathematics students from throughout the county were on hand at San Diego State College last Saturday (April 27) to vie for special honors.

Occasion was the sixth annual Honors Math Contest sponsored by General Dynamics/Astronautics.

Each high school in the county selected six students from honors math or solid geometry classes to compete. Participants were divided by schools into three divisions.

A special math test prepared, administered and scored by San Diego State College mathematics department was taken by each contestant.

The highest scoring team received a permanent trophy, while the highest scorer (individual) in each division received \$100. A special award went to the highest individual scorer in all divisions.

## TOASTMASTERS ELECT GD/ASTRO MAN

Abelardo Villareal, GD/Astro Dept. 661-4, was installed recently as president of College Toastmasters #2155.



WELCOME ABOARD — R. M. Smith, left, chief of professional placement and personnel, discusses engineering and scientific opportunities reported in General Dynamics NEWS with new employee Richard G. Huntington, center, who joined company upon recommendation of Ron Bruner, Dept. 582-0.

## First Employee-Recommended Engineer Reports for Duty

When Richard G. Huntington, Dept. 580-6 dynamics engineer, reported for work at General Dynamics/Astronautics recently, he was assured of finding a familiar face among his fellow employees.

Huntington is the first new employee to join GD/Astro as result of an effort to reach qualified engineers and scientists through friends already with the company.

Ron Bruner, Dept. 582-0, had known Huntington while both were employed at a midwestern firm, and was aware of GD/Astro's efforts to fill some 1,500 engineering and scientific vacancies this year.

He used a form from an earlier issue of General Dynamics NEWS to recommend his friend.

Since late February, more than 110 GD/Astro employees have used the forms to introduce GD/Astro to qualified acquaintances.

## Candidates Chosen In Mgt. Club Race

(Continued from Page 1)

Recording secretary candidates are Don K. Slingsby and Gordon G. Prentice. Frank L. Cook and Keith G. Blair are vying for financial secretary. Nominees for treasurer are Jack F. Scanlon and Fred A. Fox.

Two one-year vacancies on the Board of Control will be filled by either Norman D. Baird, Carl C. Dragila, James R. Evans or Frank J. Hickey. One two-year vacancy is being sought by J. Robert King and J. L. Mumford. Two men will be selected for three-year terms from a field of Albert Amison, Cornelius Beard II, Maynard L. Bjorstrom and Rolland K. Swanson.

## Earle Hill Speaks To Management Club

VANDENBERG AFB—Erle G. Hill, General Dynamics/Astronautics controller, was featured speaker at the April 17 Astronautics Management Club meeting here.

Hill discussed "Financial Management" at the meeting held in the Santa Maria Elks' Club.

Introducing Hill was C. G. Evans, chief of administrative support here, who acted as chairman for this meeting.

## Applegate Selected In SLV Appointment

F. D. Applegate has been named assistant program director—engineering for the General Dynamics/Astronautics Space Launch Vehicle project organization by C. S. Ames, vice president and program director.

Reporting to him will be P. E. Culbertson, manager of systems engineering and reliability;

T. L. Maloy, manager of test and launch operations; and a chief engineer-design yet to be named.

Applegate, who attended the University of Michigan, joined Convair in 1939 as a detail draftsman, holding a series of positions in engineering and project engineering functions until 1961 when he shifted to Astro. He was a project engineer, a staff specialist, assistant program director for space booster and more recently, chief engineer—design for the SLV project.

In another SLV appointment R. W. Streed becomes chief of booster integration, reporting to Culbertson.

## D. C. Prim Appointed To Engineering Post

A new assistant program director—engineering has been named for the electronic programs organization at General Dynamics/Astronautics by S. L. Ackerman, vice president and program director.

He is D. C. Prim.

Prim will be responsible for all engineering direction as well as coordination

with Astro's research, development and engineering department.

Reporting to Prim will be the following managers: F. J. Langston, field operations; B. G. Anderson, trajectory measurement and control; E. C. Lindkvist, scientific satellites; R. W. Perrin, engineering reliability; P. V. Smith, scientific passenger pods; and R. J. Jacobs, systems engineering design.

Prim is a graduate of Indiana Technological College. Prior to joining General Dynamics in 1952 he worked with Ford Instruments Co., Line Material Co. and Leed and Northrop Co.

## Raffesberger Named New Chief Engineer

A new chief engineer for ground support equipment, Ray Raffesberger, has been appointed for the Centaur program by Grant L. Hansen, vice president and program director.

Raffesberger will be responsible for ground support equipment, the design and development of all GSE and launch

equipment in Centaur production, test and launch facilities.

Joining Astronautics in 1955, Raffesberger worked in ground support equipment functions as a design group engineer. He joined the Centaur program in 1962 as a chief project engineer and later became manager of program coordination and scheduling.

Raffesberger holds a mechanical engineering degree and has attended Chicago Technical College, Illinois Institute of Technology and the University of California.

Prior to his Astro service Raffesberger worked for the Atomic Energy Commission at Los Alamos, Bikini Atoll and other points.



F. D. Applegate

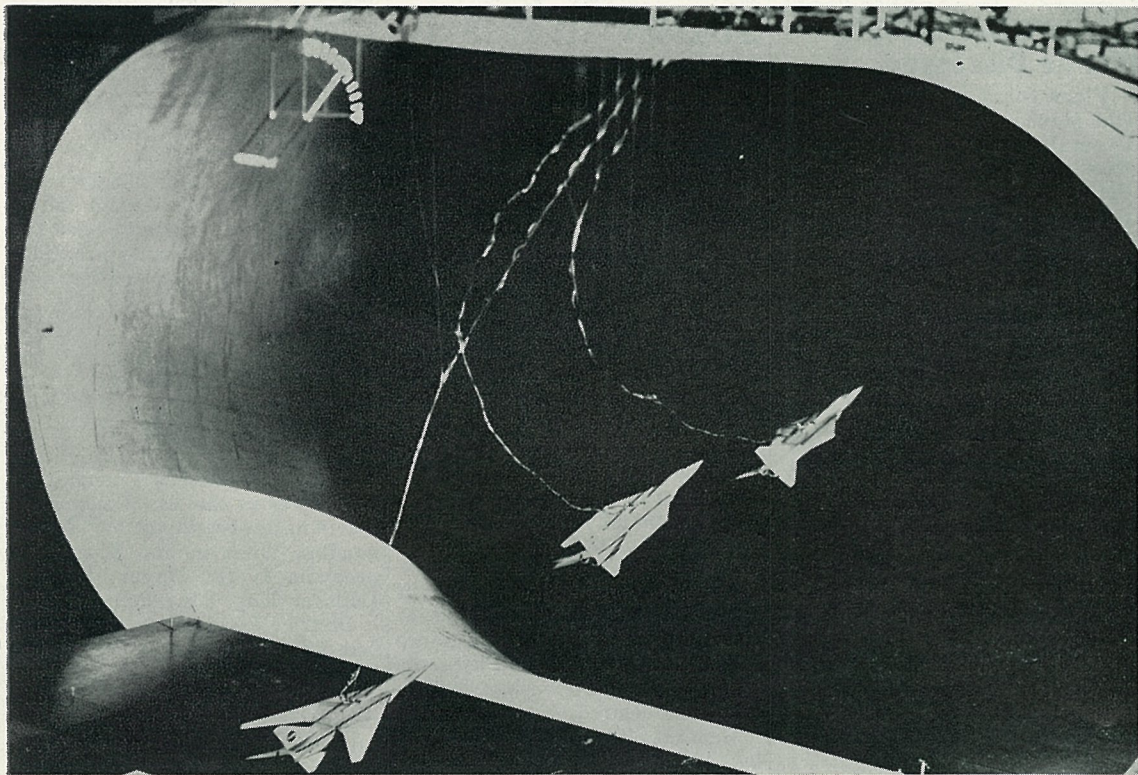


D. C. Prim



Raffesberger





**FREE FLIGHT**—Multiple exposure photo shows model in free flight at NASA's Langley Research Center. It flies in moving stream of air with cables providing electrical signals to controls and compressed air source simulating jet engine thrust. Note various wing positions.

## Development of New Pivot Concept Opens Way For Variable Wing

It's been called, among other things, the "Flying Switchblade" and the "Swing Wing," but in official Air Force parlance it's the "variable sweep wing configuration."

By any name, however, experts envision the F-111's variable wing as one of the most significant aviation state-of-the-art advancements in recent years.

The principle, as worked out by NASA engineers, consists of a wing with a base fixed to the fuselage, while the outer portion of the wing pivots on a hinge.

With wings extended straight out, the airplane cuts into as much air as possible, facilitating short takeoff or slow-speed landings. As the plane moves faster than the speed of sound,

the wings fold back on the pivot like a giant hawk's, reducing drag to a minimum.

The new wing will give the F-111 both a high-speed and low-speed capability—a dual talent no other airplane has enjoyed. The plane will be able to take off from either carrier decks or short, unimproved runways, making it a natural for brush warfare.

In the air, the F-111 will be capable of loitering (Navy version), or dashing in on supersonic sorties at either tree-top or high-altitude (Air Force version).

All this capability, thanks to the variable wing.

Virtues of the wing don't stop there. Experts claim the variable wing is destined for use on supersonic transports. The big com-

mercial liners wings could be extended for subsonic flights over populated areas, then tucked in for faster-than-sound flights over remote areas. Some see this as the only solution to the pesky sonic-boom problem.

Since it offers such great promise, why hasn't the variable wing been used before? Actually, the variable wing, after several early reversals, has been rapidly developing during the past decade.

The original idea of varying angle of wing sweep according to airplane speed has been traced back to a version of the German-built Messerschmitt P-1101. The prototype flew in 1944 and reportedly fell into Allied hands in May, 1945.

After the war, the National Advisory Committee (now NASA) initiated a program which resulted in the Bell X-5, with variable sweep from 20 to 59 degrees.

Then Grumman — G D / Fort Worth's partner in the F-111 program—stepped in with the swept-wing Grumman F101-1.

About the same time, Dr. Barnes Wallis of Vickers-Armstrong in England came up with a proposal for a supersonic airliner, using variable sweepback on the wings. This was called the "Swallow" project.

Though some of these early models and prototypes met with limited success, they all had the same glaring fault: wings were adjusted by sliding forward along the fuselage as the wing tip moved back.

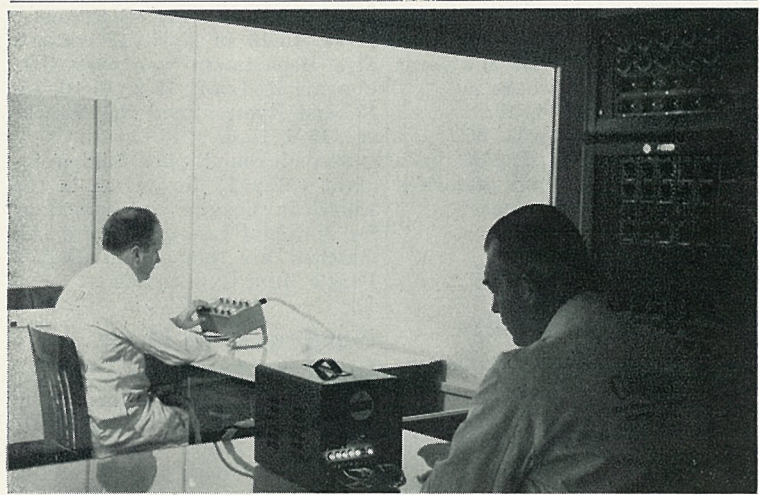
This sort of design called for a massive mechanism which proved impractical. Said a government directive of one model: "Tests . . . indicated longitudinal instability at relatively low angles of attack in the high-sweep attitude, and at moderate angles of attack in the low sweep attitude . . . lack of significant control . . . and possibility of complete loss of control in the event of engine failure."

**In short, stability and control characteristics were largely unfavorable.**

In 1959, TAC stated its requirements for a multi-purpose fighter to NASA. By 1960, Engineer John Stack and a nucleus of men from the Swallow project had evolved a system—based on original work by Thomas A. Toll—in which the pivot point was placed out on the wing away from the fuselage.

Two of the engineers who worked in the early Swallow project, William J. Alford and Edward C. Tolhamus, applied for a patent on the principle in July, 1960.

The Air Force took its requirements to industry, with the GD-Grumman team winning out in one of the longest and most exacting competitions in history.



**UNDER STRESS**—GD/Astro space science laboratory personnel utilize LOGIT equipment to measure reasoning, memory and decision-making skills. Bernard F. Pierce, left, is subject, R. L. Bottoms, tester. Latter looks through one-way window as former reacts to problems by pressing buttons with score being recorded by lighted unit in foreground.

## Test Device Developed to Gauge Loss of Efficiency Under Stress

More than 3½ million problems to measure man's reasoning, memory, and decision-making capabilities can be provided by a unique space-age device developed at General Dynamics/Astronautics.

It is a Logical Inference Tester, called LOGIT.

Astro's life science laboratory scientists under Dr. R. C. Armstrong, M.D., are employing this and other testing devices in simulating orbital missions in a space station. Of primary concern is the deterioration of an astronaut's skills under stress of space flight as well as assistance to engineers in designing interiors and equipment of vehicles.

Because man is prone to compensate for inefficient design by additional effort, direct measures of the effectiveness of design are difficult.

However, studies through measuring devices like LOGIT

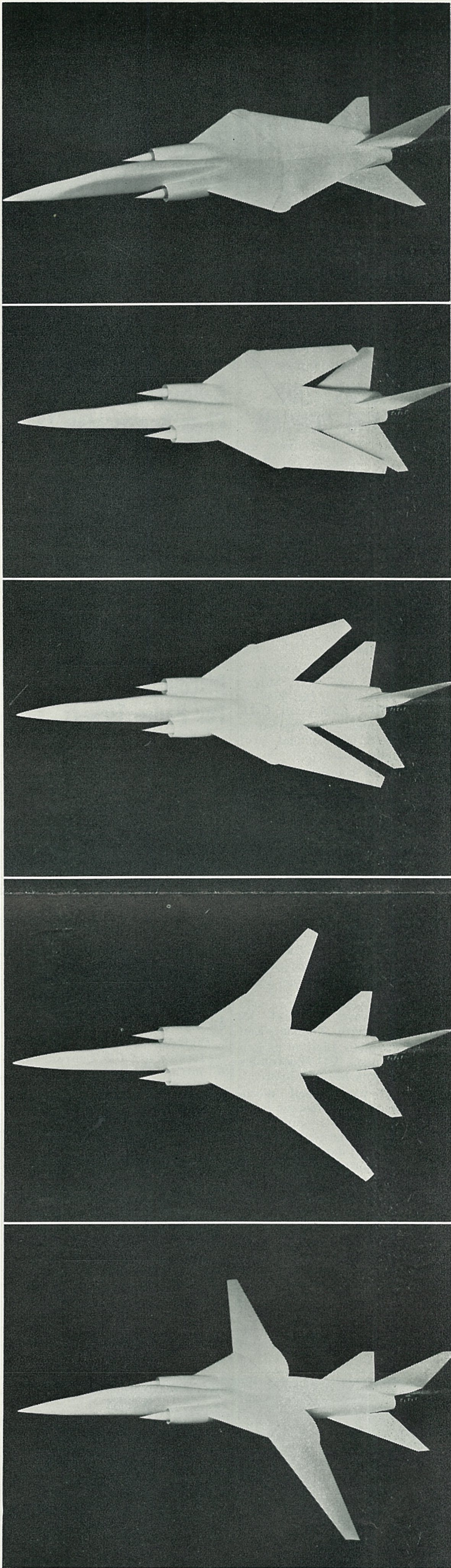
enable scientists to calculate more accurately the actual loss of astronaut efficiency brought on by equipment design inefficiency.

Life science laboratory scientists serve as "astronauts" to provide test subjects for LOGIT.

First, through two-way instrumentation, the subject establishes and demonstrates on successive trials, with the fewest possible moves, the correct order for pressing 10 buttons. Performance is measured in terms of time and the number of moves required.

Next, the element of stress is introduced by varying the time permitted for the decision from one second to five minutes. LOGIT processes can be accelerated to require extremely quick judgments.

Comparison of tests made under the two conditions give valuable indication of the subject's loss of skill under stress.



**ADJUSTABLE**—Model of military attack airplane with variable wing is shown prior to wind tunnel tests at NASA's Langley Research Center. Model was tested through speed ranges up to 2,000 mph. Wing panels are extended for takeoff, retracted for high speed flight.

## GD/E Earns Contract For Radar Systems

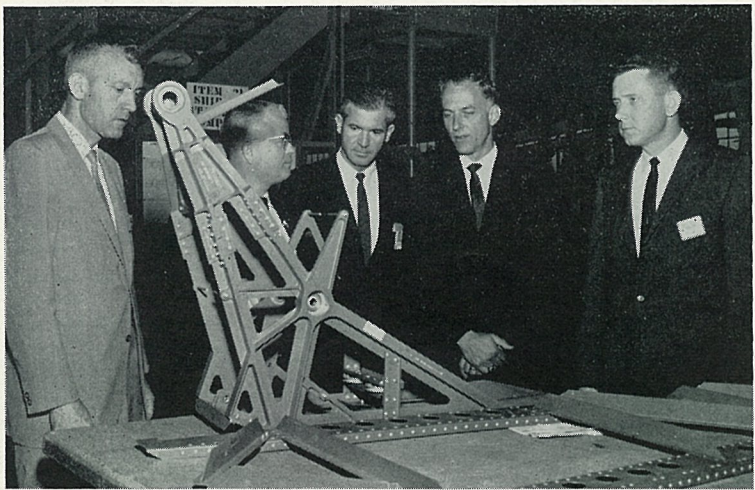
GD/Electronics-San Diego has received a letter-order contract for 20 advanced radar systems for the Navy's A5C Vigilante.

GD/E developed the radar under a series of contracts from North American Aviation's Auto-

netics Division. To date, 110 production models of the radar systems have been delivered.

The radar is a sub-system of the REINS (Radar-Equipped Inertial Navigation System) which North American is producing.





AF VISITORS — Capts. R. P. Clevenger and C. M. Leggitt, at GD/Fort Worth in AF Education-With-Industry program, and Capt. Ted Goode (center), based at GD/Astro, are shown C-141 empennage component by Paul Pearson and R. W. Miller (second and fourth from left) during tour of GD/Convair plant.

## AF OFFICERS TOUR ASTRO AND CONVAIR

Capt. R. P. Clevenger and Capt. C. M. Leggitt, Air Force officers based at General Dynamics/Fort Worth this year in the Education-With-Industry program, spent a week in San Diego last month viewing other General Dynamics divisions.

At GD/Astronautics they received briefings on the Atlas systems, factory operations, advanced product planning, and engineering research and development, material and procurement activities.

During their one-day visit to GD/Convair April 17, they viewed production facilities of Little Joe II, SATS mats, C-141 empennage and were briefed on research and development projects, including Laser.

Visits were coordinated by E. W. Thurston Jr. of GD/Astro educational services and H. W. Rubottom of GD/Convair educational services.

## COMPUTER PANEL MEETS ON COAST

Fifty representatives of nine General Dynamics Corporation divisions met in San Diego this week during the seventh General Dynamics Computer Panel meeting.

Sessions were held at the OceanHouse with Thomas Kennedy of Canadair Limited as general chairman. GD/Electronics-San Diego was host division.

Technical papers and special reports on fifteen different topics were presented. Astronautics was host for a demonstration on how Atlas flight test data is processed through computers with Carl E. Diesen, manager of data processing at Astro, directing.

The Computer Panel includes members from 11 General Dynamics divisions who meet for discussions and presentations in the field of scientific, business and management information processing. The initial meeting dates back to 1957.

Robert Moore of the Corporate staff in New York acts as overall coordinator.

## Ballroom Dancing Class Begins May 13

Astronautics Recreation Association will open a new intermediate ballroom dancing class May 13 for a 12-week run. Sessions will be held at 7:30 p.m. each Monday in ARA Clubhouse.

Instruction is available for those who have completed a recent beginner's class. Cost is \$9 per person. No advance registration is necessary.

Next beginning dance sessions will be held in the fall, according to Ludy Moeller, ARA commissioner.

## Discount Offered For Padre Tickets

Industrial Recreation Council exchange tickets now available at employee services outlets will permit GD/Astro, GD/Convair and GD/E folk to see Padre baseball at substantial savings.

Tickets are good for games on May 15, June 11, July 1 and 11, Aug. 5 and 27, and Sept. 3. Game time is 8 p.m. all nights, at Westgate Park.

When presented at the Padre box office, exchange tickets entitle holders to purchase \$2 box seats for \$1.25, or general admission (\$1.25 value) for only 50 cents.

## Mooney Outstanding In Precision Flying

Walt Mooney of General Atomic, formerly of GD/Convair Dept. 6, outflew all contestants in the recent San Diego Air Games to have his name engraved on the perpetual trophy donated by GD/Astronautics.

Thousands of spectators were treated to feats of precision flying, stunting, and competitive flying during the two-day meet, April 20 and 21, at the Brown Field site. The air games are sponsored by the SD Junior Chamber of Commerce.

## POP WARNER SIGN-UP WILL BE SATURDAY

Registration for Kearny Mesa Pop Warner Football Association will be May 4 from noon to 4:30 p.m. Information on locations is available by calling 277-2750.

## Trip to Old Mexico Will Be Discussed

Plans for a special trip into Old Mexico will be outlined to General Dynamics people next week (May 7) at a meeting in the Convair executive dining room, 7 p.m.

Jim Hardison of GD/Convair Dept. 15, who conducted travelers from CRA-ARA Spanish classes on a similar tour last summer, will explain details of this year's trip, set for the last two weeks in August.

Final arrangements pend the desires of interested General Dynamics families, although present plans call for round trip by train to Mexico City. Approximate cost of transportation, hotel and meal accommodations will be \$350 per person.

All General Dynamics people in the San Diego area are invited to join and attend the preliminary meeting on the Tuesday night date.

## GD/Astro Wife Trap Winner

A GD/Astro wife almost brought home the ladies' state champion trapshoot title with her marksmanship at the California State Trapshoot held at Kingsburg, Calif., last month.

As it was, Edna Gatterman won the preliminary ladies' handicap match, scoring 89 out of a possible 100 at 18 yards. In the finals, held in driving rain, wind, and hail, she scored 90 to place second.

She and her husband, Warner, were the only General Dynamics shots competing in the annual state meet. Gatterman won a medal for his 194 score in the 16-yd. double A event.

## Paul to Describe GLOTRAC System

A special talk on Astronautics' GLOTRAC system, plus telemetering developed for Projects Mercury and Gemini, will be presented May 14 at the Atlas Room, Town and Country Hotel in San Diego.

C. A. Paul, electronics manager of manufacturing operations, will present the talk before the American Society of Tool and Manufacturing Engineers, San Diego Chapter.

Tickets for the affair may be obtained from Earl Williams, ext. 2783 at Astro, or George Webber, ext. 1100 at GD/Convair.

## ARA-CRA Lens Clubs Plan Joint Meeting

The combined ARA-CRA Camera Clubs will meet May 5 at 7:30 p.m. in Photo Arts Bldg., Balboa Park.

Program will feature a group critique of slides and prints brought by members. ARA Commissioner Ken Rinker said the evaluation will aid club members in preparing for the group's upcoming quarterly contest.

## Season Tickets to Circle Arts Offered at 30 Pct. Reduction

General Dynamics theater-goers may purchase season tickets to the coming summer season at Circle Arts Theatre, through arrangements of Convair and Astro Recreation Associations.

Special Sunday matinees have been scheduled exclusively for General Dynamics people holding the season tickets for the eight summer performances.

Prices, at a 30 per cent reduction of regular season ticket rates, range from \$23 to \$11, depending upon seat location.

Brochures and seating charts are now at all employee services locations for the convenience of GD/Astro, GD/Convair, and GD/Electronics people. A \$5 deposit for each seat must be paid at time of sign-up, with the balance to be paid by May 20. Payments can be made in weekly installments, if desired.

General Dynamics dates will be: "Wildcat," starring Martha Raye, June 2; "Carousel," with Ann Blyth and Peter Palmer, June 16; "Damn Yankees," with Shelley Berman, June 30; "Flower Drum Song," starring Pat Suzuki, July 14; "Paint Your Wagon," with Frankie Laine, July 28; "Wish You Were Here," Aug. 11; "Can-Can," Aug. 25;

## ARA, CRA Pistol Shots Hold Team Contest

Semi-annual contest between ARA and CRA pistol shooters was held Sunday (April 28) at San Diego Police Pistol Range, Home Ave. and Federal Blvd.

At stake were individual trophies for members of the winning team, plus a large trophy.

Representing CRA in the Camp Perry Police Course match were W. G. Walker, Joe Williamson, Jim Halfacre and Vern Mardis. Roland "Red" Schneider, Ralph Sanderlin, Al Schindler and ARA Commissioner Gordon McPherson fired on behalf of ARA.

## Salvage Yards Open On Alternate Sats.

Alternating Saturday schedule for employee sales at GD/Convair and GD/Astro salvage yards for the next four weeks is:

GD/Astro—May 4, 18.

GD/Convair—May 11, 25.

Hours are from 8 a.m. until noon. Children are not permitted in the salvage yard areas.

## Rocket Club Opens Essay Competition

Papers dealing with significant aspects of the historical development of rocketry and astronautics may now be entered in the National Rocket Club's 1963 essay competition.

Winner, announced in March of 1964, will receive the Goddard Historical Essay Trophy and \$200.

Entries should be submitted by Nov. 1 of this year to Goddard Historical Contest, in care of National Rocket Club, 1745 K St., N.W., Washington 6, D.C.

"Annie Get Your Gun," with Gisele McKenzie, Sept. 8.

The Circle Arts Theatre, off Hwy. 395 on Clairemont Mesa Drive, has been renovated for the 1963 season with sound proofing, air conditioning, and heating systems.

## Toastmasters Slate 'Week'

General Dynamics Corporation employees in the San Diego area will join in observance of "Toastmasters Week in San Diego" as proclaimed by Mayor Charles Dail for May 4 through May 11.

District 5 Governor Cy Campbell (Astronautics) indicated the week of awards, presentations and special activities will be climaxed May 11 with a spring conference at U.S. Grant Hotel.

Ken Samples (Convair) is Area 5 governor and display chairman.

Bob Byron, Area 5 speech contest winner, will compete with speakers from seven other local areas for the right to take part in the regional contest in June at Los Angeles.

Ray Sodomka (Astronautics) president, and Ed Wynn (Astronautics), vice president, of Dynamics #457 Toastmasters invited all employees to take part in regular Thursday (6 p.m.) activities of the group with meetings held at the Convair executive dining room on Pacific Highway.

## Dynamics Unbeaten In Volleyball Play

Astro's Dynamics volleyball team swept through first half of IRC American League play undefeated.

In April 17 matches Dynamics downed City Engineers, 15-5, 15-9. Gasco won over CSEA, 15-13, 15-10.

In National League standings Ryan was undefeated with one game to go on April 25.

Miramar beat GD/Electronics, 15-14, 15-10 in April 18 contest. Fire Department won over GD/Convair Hi-Lows, 15-2, 15-16, 15-12, and Ryan ruined the Wreckers, 15-6, 15-6.

Second round play begins tonight (May 1) for teams in the American League and tomorrow for National League players. All matches are played on Balboa Park's Muni Gym courts.

## Gardeners to Hear Insecticides Talk

Garden Club members from GD/Astro, GD/Convair, and GD/Electronics will meet tonight (May 1) to hear a talk on insecticides.

A representative from Dresser Corp. will answer questions on insect problems at the joint ARA-CRA meeting, 7:30 p.m., Floral Association Bldg., Balboa Park.

Door prizes will be given and refreshments served.



AROUND THE BASES—At right, Senator Margaret Chase Smith, Maine, receives Atlas model from GD/Astro's Emile Genest during recent tour of Vandenberg AFB. In center, Ed Johnston, left center, recently succeeded Gene Sims, right center, as ARA president at Vandenberg. Here they "ham it up" with Gordon Gill and Jack

Anderson, Santa Maria and Lompoc recreation directors. In photo at left are ARA cagers who walked away with Cocoa (Fla.) City League championship. Kneeling are Coach Bob Noe, Dick Goodwin, Wayne Mitchell and Don Stradley. Standing are Art Roeder, Dave Butler, Charlie Tuck, Ray Poole, Jim McDougal, Farley Adams.



## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**ARTS & CRAFTS**—Reorganizational meeting 7:30 p.m., May 8, ARA Clubhouse.

**BALLROOM DANCING**—New intermediate class starts May 13, 7:30 p.m., ARA Clubhouse. Fee \$9 for 12-week series. Register at first session.

**BOWLING**—Summer leagues at Clairemont, Parkway, Poway, start week of May 13, with entries due Friday (May 3) at employee services outlets.

**CAMERA CLUB**—Meeting May 5, 7:30 p.m., Photo Arts Bldg., Balboa Park. Group print-slide critique.

**CHORUS**—Rehearsals each Monday, 7:30 p.m., ARA Clubhouse.

**DANCE**—"Spring Frolic," May 18, El Cortez Hotel. Tickets 75 cents each at employee services outlets.

**DRAMA**—"Seven Keys to Baldpate," May 9, 10, 11, 17, 18, 24, 25, ARA Clubhouse auditorium.

**FISHING**—Meeting 7:30 p.m. today (May 1), ARA Clubhouse.

**GARDEN CLUB**—Joint CRA-ARA activity meets 7:30 p.m. today (May 1), Floral Assn. Bldg., Balboa Park.

**GOLF**—Twilight League entries close Friday (May 3). Enter by AVO at employee services, Bldg. 8. \$15 per team.

**HI-FI/MUSIC**—"Swap night," May 3; meeting, May 14, both at 7:30 p.m., ARA Clubhouse.

**PHYSICAL CULTURE**—Reorganizational meeting, 7:30 p.m., May 16, ARA Clubhouse.

**ROCKHOUNDS**—Meeting Tuesday, May 7, 7:30 p.m. ARA Clubhouse. Field Trip to Yuma Test Station, May 11-12.

**SAILING**—Monthly business meeting, 7:30 p.m., May 6, ARA Clubhouse.

**SOFTBALL**—Representative team plays at 8 p.m., each Friday, ARA diamond.

**STAMP CLUB**—Auction May 2, trading session May 23, both at 7:30 p.m. at ARA Clubhouse.

**TEEN CLUB**—"Sock hop," 7:30-11 p.m., May 4, ARA Clubhouse. Admission 50 cents per person. Each member may invite one guest, one guest couple.

**WIVES CLUB**—Plant tour May 15. Reservations with Hope Martin, 446-5701, or Helen Johnston, 277-2308.



**SWINGIN' SOCKS**—Happy crew of ARA Teen Club members such as these pictured at earlier "Sock Hop" will gather for a repeat May 4 in ARA Clubhouse. In addition to awards for "loudest" socks, prizes and trophies will be presented winners of Twist and Limbo contests.

## Sports & Recreation

### Teen Club Members Choosing Loudest Socks for Next Hop

Another of ARA Teen Club's popular "Sock Hops" is scheduled for ARA Clubhouse, 7:30 to 11 p.m., May 4, with contests and prizes galore.

John Hess, ARA commissioner, has suggested that those attending wear bermudas — and the "loudest" socks they can find.

Trophies and prizes will go to winners of Twist and Limbo contests. Music will be by "The Chancellors."

Admission is 50 cents per person, with each Teen Club member permitted to bring a guest and a guest couple.

"Any GD/Astro teen-ager can

get in on the fun," Hess said. "Parents are asked to complete club application forms available at employee services outlets, and upon approval, membership cards will be issued."

Hess also appealed for more parents to assist in chaperoning Teen Club events, usually held twice each month. No dance is planned for May 18, however, due to schedule conflicts for use of ARA Clubhouse.

### Mgt. Club to Sponsor Keg Mixed Doubles

Astronautics Management Club will sponsor a mixed doubles handicap bowling tournament May 11-12 at Mission Valley Bowlero.

Contestants will pay bowling and scorekeeping fees only (\$3.50 per couple) with the club supplying suitable awards.

Additional plans for a mixed summer league for members have also been announced. The loop will also meet at Mission Valley Bowlero, opening May 20 and closing Aug. 19. Further information on the program is available through F. L. Erwin, ext. 3509, or Mike Edwards, ext. 1540.

### 'Swap Meet' Slated On Hi-Fi Equipment

Something new will be added at ARA Clubhouse this Friday (May 3) when Hi-Fi/Music Club introduces a "swap meet" for used hi-fi and test equipment.

"We have invited all GD/Astro employees who wish to buy, sell or trade equipment, tapes or records, to join us in meeting room 'A' between 7:30 and 10 p.m.," said ARA Commissioner Ben Lachance.

No dues or fees of any kind will be charged for use of the "swap" service. Music and free refreshments will be provided.

At its next general meeting, Hi-Fi/Music Club will feature Joe Echeverria and a discussion "All About FM Antennas." This session is scheduled for the hi-fi studio in ARA Clubhouse, 7:30 p.m., May 14.

### 'Spring Frolic' Dance Tickets Are On Sale

Tickets for ARA's gala "Spring Frolic" dance, May 18 in International Room, El Cortez Hotel, are still available at employee services outlets.

Intermission entertainment and dancing to music by Buster Carlson and his Astro band are scheduled for the event which will last from 9 p.m. until 1 a.m.

Admission is 75 cents per person.

## Astro Players' Mystery Show Will Begin Seven-Night Run

Introduction of a new "Family Night" plan, plus a top-flight cast, will highlight Astro Players' production of "Seven Keys to Baldpate," opening next week for a seven-night run at ARA Clubhouse auditorium.

The show, a mystery by George M. Cohan, opens May 9, with other performances May 10, 11, 17, 18, 24 and 25. Curtain time is 8:30 p.m.

Regular admission is \$1 for adults, and 50 cents for juniors. However, under the new "Family Night" arrangement, children of school age will be admitted free to Friday performances (May 10, 17, 24) when accompanied by their parents.

The play will be directed by Ron Shapiro, with Art Templin, Evelyn Johnston, Ted Cottrell, Suzy McEntee, Beverly Blumling, Millie Rankin, Dick Keating, Annabel Audet, Frank Tierney, Al Varon, Harvey Sampson, Bob Ross and Charles Audet included in the cast.

The plot concerns novelist William Hallowell Magee, who wa-

gers he can produce one of his "blood-and-thunder" yarns in only 24 hours, and goes into seclusion at "deserted" Baldpate Inn to prove it.

The play introduces a bizarre assortment of characters before ending with a double twist which promises to leave the audience both amazed and amused!

### Final Call Sounded For League Keglers

Final call was sounded this week for bowlers planning to take part in ARA-sponsored summer leagues.

Commissioners Tony Minniti and Bryan Weickersheimer said team and individual entries should be turned in by Friday (May 3). Entry blanks are available at employee services outlets.

Action begins during the week of May 13 and continues through the week of Aug. 15. Next week each league will elect officers and map rules. Meetings will be at 7:30 p.m. on the same night the league will bowl the following week. All team captains must attend.

Three leagues each will roll on Tuesday and Thursday and one on Friday at Clairemont Bowl. One league rolls at Parkway on Tuesday and another on Wednesday at Poway.

### ARA Softball Team Begins Play Friday

ARA's representative softball team has begun a series of home games played each Friday at 8 p.m. on the ARA diamond.

The team was winner last year of the La Mesa Invitational Tournament, and runner-up for the San Diego AAA crown.

Competing in an Amateur Softball Association pre-season meet recently, the Astro club downed Linda Vista Cafe, 3-1, with pitcher Roy Neie allowing only two hits. Two of Astro's three runs were knocked in by R. Fenton.

ARA Commissioner F. L. Erwin has said the group still has openings for top-notch players. Interested employees may contact him at ext. 3509, or Robert Lange, ext. 1241 for details.

### Darrell Stalnaker's Series of 1,285 Wins

Astronautics' Darrell Stalnaker (Dept. 379-3) coupled a series of above-average games late last month to win the Parkway Bowl's section of the Great Western Bowling Classic.

Qualifying in a three-game series earlier, Stalnaker went into the finals against 60 other contestants. Although his top game was 184, he managed to roll above his 155-average consistently for a 1,285 handicap total, tops in the field.

### PHYSICAL CULTURE CLUB TO ORGANIZE IN NEW FACILITY

With a new physical conditioning facility only weeks from completion, ARA Physical Culture Club will hold a planning and organizational meeting at 7:30 p.m., May 16 in ARA Clubhouse.

The facility, a 32 by 60-foot addition to the clubhouse, is in final stages of construction, and will ultimately house the club's impressive array of weight-lifting and exercise equipment.

Participation in construction work parties has been good, as employees and members of their families gather Tuesdays and Thursdays from 4 to 7 p.m. ARA provides all necessary tools, supervision, and refreshments.

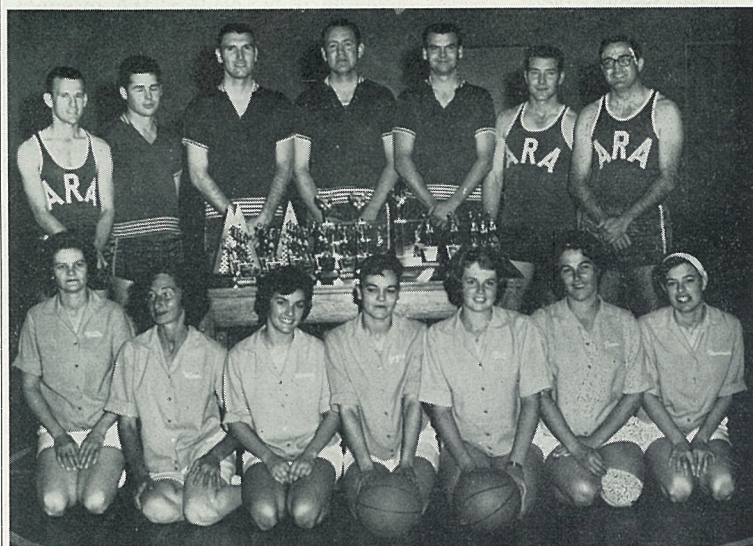
ARA Commissioner Clyde Burkhardt extended a special invitation to judo enthusiasts to attend the organizational meeting, as the new facility will provide space for installation of the group's judo mat.

More information on Physical Culture Club is available from Burkhardt, ext. 1949.

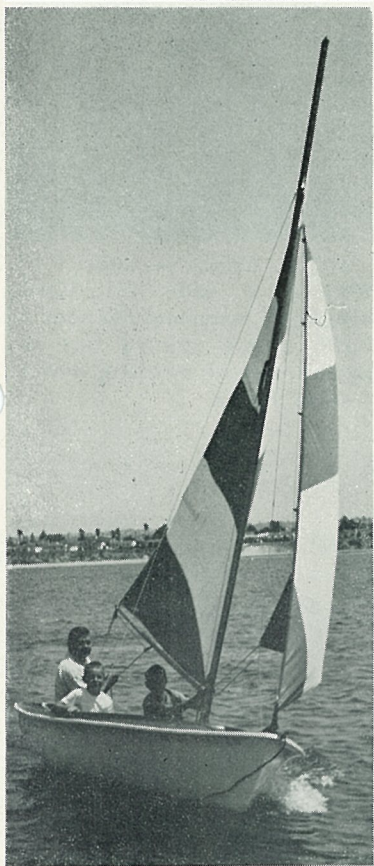
### Ballistic Bowlers Roll 1,057 Pin Game

Paced by Frank Goroszk, team captain, the Ballistic team of the 860 Astro Classic League (Clairemont Bowl) turned in one of the top performances of the year in shop action on the final night of bowling last week.

Goroszk, who carries an 181 average, rolled games of 266, 213 and 235 for a 714 scratch series. The team came in with 1,057 pins for a single game. Other team members are Jim Van Caster, Phil Parker, Ray Parga and Bob Bowers.



**SUCCESS STORY**—ARA-sponsored men's and women's cage teams at Vandenberg AFB recently climaxed successful seasons (note trophies) by playing one another. Men won, but just barely. Gals from left are Millie Miller, Winn Rees, Nancy Moore, Joyce Welch, Pat Tarlton, Jean Young and Maureen Gray. Men players include Billy Woods, Jerry Lauderdale, Bob Douglas, Gil Evans (player-coach), Jerry Townsend, Bill Schmidt, George McGavern.



**SPRING FEVER**—ARA Sailing Club member Al Stockett introduces nephews Jim Stockett, 11, and Don Lee, 13, to Mission Bay aboard 15-foot Satellite class sailboat. Club offers discount boat rental rates to members. Business meeting is set for 7:30 p.m. May 6, ARA Clubhouse.

### Arts, Crafts Club Will Reorganize

New impetus will be given ARA Arts and Crafts Club at a reorganizational meeting scheduled in ARA Clubhouse, 7:30 p.m., May 8.

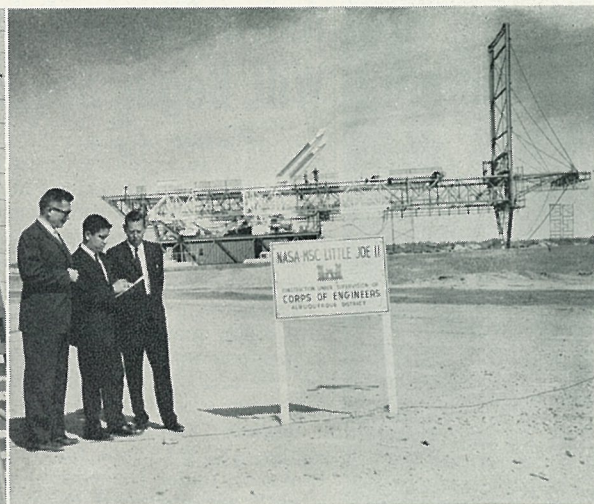
D. A. George, ARA commissioner, has encouraged all members and prospective members to attend. The agenda will include discussions of new clubroom facilities, budgets, and a meeting calendar.

Additional information is available from George, ext. 4150, at Plant 71.

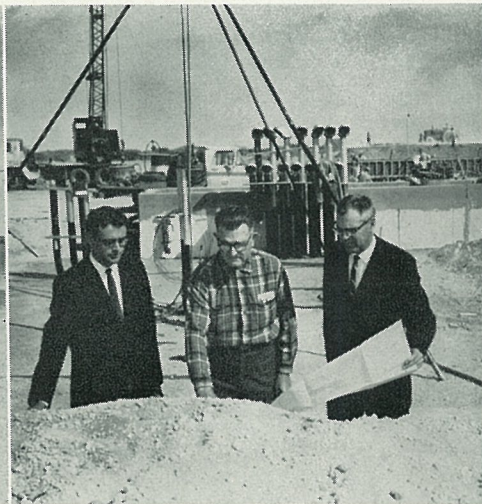




**ON SITE AT WHITE SANDS**—In first shots taken at White Sands Missile Range, N.M., as GD/Convair personnel arrive for Little Joe II launch operations are (at far left) Henry VanGoey, NASA assistant resident manager in charge of engineering; O. L. Todd of GD/Convair, in charge of operations support; J. S. Boaz, GD/Convair site administrator; H. K. Cheney, GD/Convair's Little Joe II deputy program manager, launch operations; William Frye,



NASA engineer in charge of Little Joe II operations at WSMR. In center photo are Cheney; Ernie Reyes, NASA engineer coordinating GD/Convair activity at WSMR; and Todd with Little Joe II service tower in horizontal position for rework in background. In photo at right are Charles M. Davis, first employee hired at WSMR for Dept. 311, W. H. Odle, GD/Convair facilities engineer, and Boaz consulting during installation of launcher rails.



## Blaze Destroys Bayonne Plant

The Bayonne, N. J., plant of the Electro Dynamic Division of General Dynamics was totally destroyed last month in one of a series of fires that swept the New Jersey-Staten Island area.

Roger Lewis, president, said the company intends to meet all commitments to customers and will utilize all Corporate facilities and possible outside sources in order to do so. Electro Dynamic, manufacturers of electric motors and generators, employs approximately 500 persons.

Raymond B. Carey Jr., division president, said temporary facilities already have been set up at the Englander Co. Plant and purchasing, engineering and supporting groups are working there.

## F-106 Arrested By Tail Hook

"Real smooth, no jolts," was the word from the Air Force pilot slamming an F-106 against a steel cable at 118 and 145 mph in tests of a new portable jet aircraft arresting barrier at the AF Flight Test Center, Edwards AFB, Calif.

The F-106 and F-102, Convair-built jet interceptors, together with two F-100s made 12 simulated landing arrests in recent successful completion of one phase in a continuing two-month series of tests of the arresting device.

All of the craft making the high-speed runs were stopped safely and smoothly from 700 to 950 feet from point of catching the cable with the steel hook under the tail of each plane.

The portable barrier, which can be flown wherever needed in an AF cargo plane, consists of two 4,800-lb. hydraulic brake systems, set opposite each other on both sides of the runway. They are fastened by removable stakes and earth anchors.



**HOOK CHECK**—Capt. F. R. Williams of 456th FIS, Castle AFB, Calif., examines tail hook of F-106 before starting test run against new AF arresting device. —USAF Photo.

## Navy to Test GD/Electronics' Terrain Radar

First military trial of the terrain following radar developed by General Dynamics/Electronics-San Diego will begin this month under direction of the Navy.

A high performance military jet aircraft, the Navy Skyhawk, will be used for first jet flight evaluation. First flights will be at low altitudes in the San Diego area with assistance of GD/Electronics' engineering. The Navy will continue with a 60-day flight evaluation of the system at its Patuxent River, Md., Naval Air Test Center.

The compact system, weighing only 40 pounds, has been successfully tested by GD/Electronics in B-25 and B-26 aircraft with both automatic and pilot-guided flights.

Purpose of the system is to aid aircraft and drones to fly safely at low altitudes across any terrain and water—in fog, rain, or darkness. By setting the system to keep aircraft above all obstacles, the pilot can avoid collisions with ground obstructions.

In military applications, even under zero visibility, it will enable pilots to escape detection by early warning radar by flying so low that such devices do not detect the aircraft.

Use in both commercial and military aircraft will permit blind let-downs through cloud cover to non-instrumented airfields. It also is a vital safety device for a pilot who drifts off course during adverse weather.

## Dummy Payload Built For Use on Little Joe

GD/Convair's own version of a dummy payload to check out initial operations of Little Joe II launch vehicle will be leaving the San Diego plant, along with sections of the first vehicle assembly, some time this month bound for White Sands Missile Range, N.M.

(First launcher, three truckloads of disassembled parts, moved out of Plant 1 the morning of April 22 for on-schedule arrival at White Sands. This schedule was set up approximately a year ago and is being met, said J. B. Hurt, GD/Convair Little Joe II program manager.)

The low-cost simulation of the North American Aviation Co. test payload, with its abort tower and abort motor, will top the height of the entire Little Joe II vehicle, and actually weigh more—or about 17,000 pounds.

Made of 1/4 and 3/8-in. steel boilerplate to GD/Convair specifications by Colby Crane Co. of Seattle, Wash., it duplicates, as nearly as possible, the shape, size, weight, and center of gravity of the North American article.

The dummy unit is designed to simulate the shape and weight of the command module, or upper section in which astronauts will ride in the Apollo spacecraft, and the service module, which will contain motors, fuel, telemetering equipment, and instrumentation.

The GD/Convair boilerplate version was built purely for a true checkout of the Little Joe II launch vehicle, being constructed for National Aeronautics and Space Administration for sub-orbital testing of the unmanned Apollo spacecraft and escape system.

Next step, following first qualification checks with the make-believe payload, will be a checkout with a North American boilerplate payload containing all of the separation provisions of the actual Apollo command and service modules. And, from there, launch tests will go on to use a prototype more closely resembling the Apollo modules.

Qualification launches at the White Sands site are slated for mid-year.

## GD/Astro Adopts TV Technique, Checks Cleanliness of Parts

Microscopic contaminants which, if present in excessive degree, might threaten hydraulic support systems for Atlas boosters, are now being spotted in General Dynamics/Astronautics receiving-inspection (Dept. 143-2) the modern way—on television.

The application of "micro-TV" to clean room operations was developed through joint efforts of General Supervisor S. S. Smith's receiving-inspection group, and GD/Astro's motion pictures and television (Dept. 124) under Television Supervisor L. E. Steadman.

Major advantage of the new technique is that it's "easy on the eyes."

Certain hydraulic parts entering the Dept. 143 clean room in Bldg. 5 are flushed with a solvent such as trichlorethylene. The solvent is poured through a membrane filter which then is examined by microscope to determine the number, size, and type of contaminant particles.

In other cases, hydraulic oil from the part in question is filtered.

These same procedures continue under the new system. However, instead of making his examination via microscope eyepieces, the inspector now does his particle counting by watching the screen of a 17-inch television monitor.

The set-up consists of a binocular microscope, fitted with an adapter to which the small closed circuit TV camera is attached.

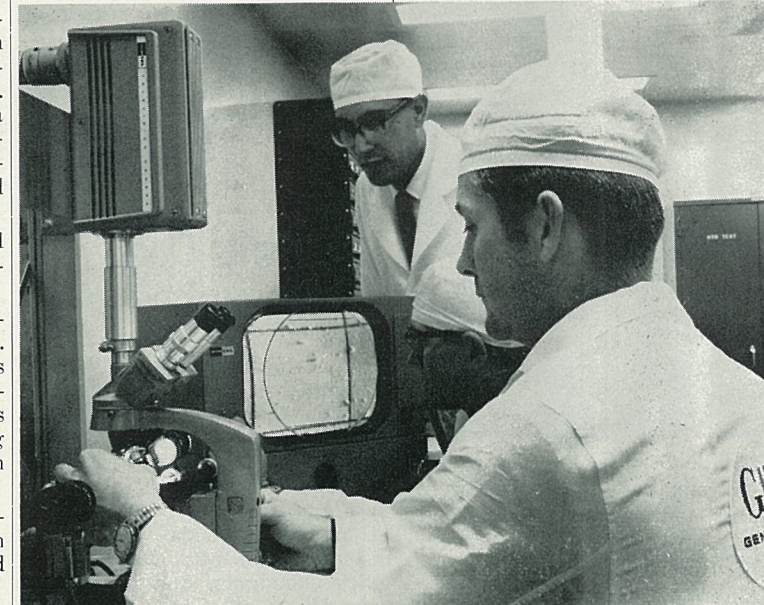
The microscope's optics replace the camera's usual lens, and a calibrated plastic grid has been fitted over the monitor

screen to permit direct measurement of particles.

"Use of closed circuit television reduces operator eye-strain," explained C. W. Foster, senior quality control engineer charged with development of the system.

"This cuts down possibility of error and increases speed of operation without reducing efficiency."

Technical aspects of the installation were directed by Bill Hetrick of motion pictures and television. It was not necessary to acquire new TV equipment as both camera and monitor were available after use on another production task.



**NEW WAY**—Inspector R. L. "Willie" Williams, left, adjusts filter under microscope, as Frank Finch and Leonard Showalter check image on TV screen at GD/Astro.

## Physicist to Present Paper at Conference

Dr. Esther Krikorian of the General Dynamics/Pomona physics group (Dept. 6) is scheduled to present a paper May 13 at a conference on single-crystal film at Philco Scientific Laboratory, Blue Bell, Pa.

## GD/E 'Pop-up' Antenna Concept Designed to Survive Attacks

A new hardened, "pop-up" antenna concept, designed to withstand severe environmental effects of nuclear attacks, has been announced by General Dynamics/Electronics-San Diego.

The technique was developed

by GD/E in conjunction with Chu Associates of Boston, Mass., a leading antenna research and development firm.

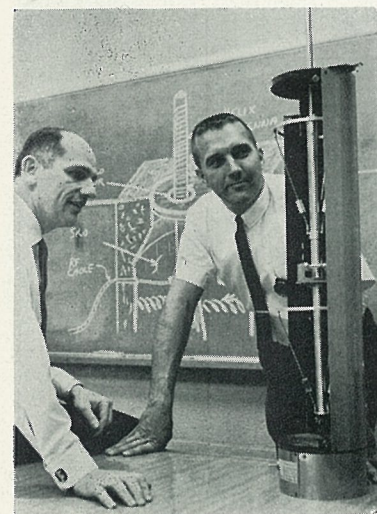
Designed for radar and communications centers, the antennas would be mounted in protective underground silos. In the retracted position, the antennas would be safe from shock and radiation created by nuclear blasts.

According to Dr. Donald Wahl, GD/E manager of research and engineering, the antenna concept is aimed at helping the nation's defense forces to bounce back in the event of nuclear assault.

"With the nation's missile sites buried in silos to withstand attack, it is necessary that radar and communications links receive similar protection," Dr. Wahl said.

For the past two years, a major portion of the advanced engineering effort at GD/E-San Diego has been directed toward development of hardened antenna concepts for HF, UHF, VHF, microwave communications and radar systems.

Robert Durnell, GD/E chief of analysis equipment, directed design development of the new concept as well as other antenna versions, with R. C. Baker, project engineer.



**NEW CONCEPT**—Robert Durnell, GD/Electronics chief of analysis equipment, and R. C. Baker, project engineer during development of new pop-up antenna design, examine model at GD/E - San Diego.



# First Award Made Under Revised GD/Astro Cost Reduction Program

First award payment under General Dynamics/Astronautics' newly-revised cost reduction program was made recently to Jan P. Lowe, Dept. 684-5. Lowe proposed use of an electric typewriter with a special type-face for preparing flight test evaluation report material "in house," rather than calling upon a commercial typesetting firm.

His Employee Suggestion (ES) may save GD/Astro some \$13,131 in its first year of use. GD/Astro's cost reduction programs are handled by organization and systems (Dept. 170) under J. H. Johnson, director of management systems. In recent months, both the ES program (for hourly employees) and the Cost Improvement Proposal (CIP) plan for

salaried personnel have been extensively redesigned. ES and CIP forms are available at suggestion boxes throughout GD/Astro's facilities. These will be used as in the past, and are collected weekly for processing. After screening by an organization and systems group, suggestions are now sent simultaneously to permanently

assigned cost reduction representatives in all departments concerned. Departmental comments are collected and reviewed by the cost reduction group, which then forwards them with recommendations to the appropriate management level for final approval. The originator of an ES or CIP is notified when processing

of his suggestion is begun, and, if his idea must be rejected, he will be advised of the reasons. Employees have been urged to submit any ideas they feel may be of value. However, suggestions must meet specifications listed on ES/CIP forms, and these forms must be fully completed. Salaried employees whose (Continued on Page 2)

## GD

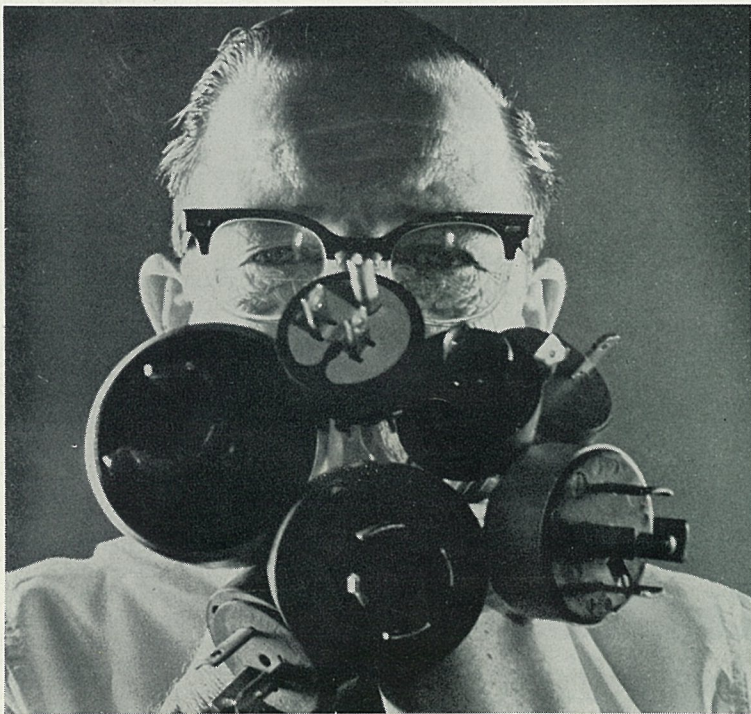
ASTRONAUTICS EDITION

# GENERAL DYNAMICS NEWS

Vol. 16, No. 10

PUBLISHED BY GENERAL DYNAMICS CORPORATION

Wednesday, May 15, 1963



**DANGEROUS BOUQUET**—Cluster of plugs is displayed by Safety Engineer Jim Cooper to illustrate variety of uses for electricity at GD/Astro—each a potential hazard for careless employee.

## Treat Electricity With Respect, Astro Advised

The dictionary defines it as "an imponderable and invisible agency, capable of producing light, heat, and other physical phenomena."

It was called by its common name — electricity — when discussed last week at a meeting of General Dynamics/Astronautics General Safety Committee.

(The General Safety Committee is comprised of senior representatives of all GD/Astro departments, and meets monthly under chairman J. P. Hopman to develop, review and define safety policy.)

Use of electricity on the job is "second nature" to nearly all GD/Astro employees. It drives power equipment in production areas; copies letters and operates office typewriters.

But the Safety Committee was concerned with electricity as a hazard: isolated instances where employees took this "imponderable and invisible agency" so much for granted that it posed a threat to life and property.

These incidents are recorded in files of the safety section, industrial relations department (Dept. 130-8), which investigates each in order to prevent recurrence.

GD/Astro keeps close watch on all its electrical equipment. Most is equipped with mechanical or common ground—or both. Maintenance (Dept. 250) electricians constantly check to detect even the most remotely unsafe condition.

But occasionally an employee receives a shock or burn, usually because of thoughtlessness — or through trying to "beat the system."

Typical is the case of an employee who felt it "too much trouble" to request an approved extension cord, and brought a privately-owned cord from home. The "bootleg" cord was defec-

tive. When it short-circuited, the employee's foot was burned.

There are other cases: The two-prong plug forced into a three-way outlet; the shop "wit" who wrapped solder around all three prongs of a soldering iron plug.

In these instances, no one was injured — but the danger was there.

"Electricity is a valuable friend," said J. W. Garrison, chief safety engineer. "But those who know it best — electricians, electronics technicians—treat it with respect."

Garrison urged employees to "use common sense" when dealing with electrical equipment, and to observe such basic safety precautions as making use of the grounding devices supplied.

"GD/Astro makes every effort to keep its equipment safe," he said. "Employees who notice discrepancies such as frayed cords, open switch panels, etc., are asked to notify supervision IMMEDIATELY so these can be corrected."

## ELECTRO DYNAMIC, FACTORY IN RUINS, PUSHES COME-BACK

Phoenix, the mythical bird with miraculous powers of rejuvenation, symbolizes the massive effort being made by Electro Dynamic Division to rebound from the fire which destroyed its Bayonne, N. J., plant last month.

Fire hit the plant shortly after 2 p.m. April 20. Propelled by gusts up to 40 knots, it swept through the eight major and five smaller buildings. Five hours later, when the blaze was declared under control, the only equipment that had not been destroyed or severely damaged consisted of a truck and a station wagon. Fortunately, all employees in the plant at the time had been evacuated. No one was injured.

The oldest of General Dynamics' operating units, Electro Dynamic has been manufacturing electric motors and generator sets for more than 80 years, first in Philadelphia and since 1905 in Bayonne. Over the years, it has developed a reputation for high quality design and production, especially in the field of vibration-free and low-noise level motors for defense and industry. Electro Dynamic products are used extensively on nuclear submarines because they minimize the possibility of detection. They also provide high precision performance for manufacturers in the machine tool, elevator, air conditioning, automotive and other industries.

Even while the ruins were smoldering, division management began planning "Operation Phoenix." According to an Egyptian fable, the Phoenix was a singular bird which lived for 500 years, was consumed by fire, and rose with renewed youth from its own ashes.

Sunday morning following the fire all department heads gathered at the home of Raymond B. Carey Jr., division president. Roger Lewis, General Dynamics president, had assured him of complete assistance from the Corporation. Every other division either wired or telephoned with offers of equipment, personnel and facilities. Assistance was also

(Continued on Page 3)



**MONEY SAVER**—J. P. Lowe (right), Dept. 684-5, explains use of modified electric typewriter to replace commercial typesetting on reports. C. S. Ames, GD/Astro vice president—space launch vehicle, presented Lowe with cash award for idea expected to save division over \$13,000 in first year of use.

## 'We Can Produce The Best Plane'

Roger Lewis, president of General Dynamics Corporation, appeared before the McClellan Committee in Washington, D. C., last week and presented Dynamics' side of the TFX controversy. Following are excerpts of his remarks:

"We at General Dynamics understand the vital interest of this committee both in the proper expenditure of public funds and in the most effective possible defense of this nation. I assure you that we share the same interest. The question of capability — that is, the capability to develop for, and deliver to, the using services an aircraft that meets their highest requirements, within an effective time span, and at a reasonable cost — may best be put in perspective in terms of the history of this company."

(At this point he reviewed the history of General Dynamics divisions.) "Much more to the point, however, has been the history of the past decade, since General Dynamics itself came into existence. Within that short time span, General Dynamics developed and produced not one but five major weapon systems—simultaneously. These combined programs—Atlas intercontinental ballistic missiles, nuclear submarines and nu-

clear ballistic missile submarines, B-58 bombers, F-102 and F-106 aircraft, Terrier and Tartar air-defense missile systems—represent a major cornerstone of this country's total defense system. No other company in the world can match that record.

"Every one of these represented, through their development and production, enormous advances in technology over anything previously considered within the state of the art. In many aspects they continue to represent unmatched technology.

"The advanced technological and scientific capability that made this sweep possible is still intact. We are quite accustomed to taking quantum, rather than merely incremental, steps. We are accustomed to the unique problems associated with the development of

(Continued on Page 2)



Roger Lewis

## Winners in Annual Math Contest Feted at Banquet by GD/Astro

Winners in the mathematics contest sponsored annually by General Dynamics/Astronautics for San Diego County high school students were announced last week at an awards banquet.

The event, held in Hotel del Coronado's Crown Room, honored over 225 students, their teachers and principals.

W. W. Withee, GD/Astro vice president—engineering, presented the sweepstakes trophy to John Clague of Point Loma High School.

Clague also received the \$100 cash award as top student from a city school. Herbert Schulze,

Army-Navy Academy, was independent school winner, and Edward Kelm (Vista) and Sandra Hutchins (Grossmont) scored an "unbreakable" tie for county schools winner.

Six-student teams from Clairemont (first place), St. Augustine, and Grossmont, earned trophies for their schools.

Clairemont team members were Gary Anderson, Ove Nielsen, George Rothbart, George Shorman, James Warniak and Max Bartlett.

On the St. Augustine team were Alan Burge, Jeffrey Kasma, Leonard Weber, James D'Alessandro, Michael Camarata and Thomas Crothy.

Joan Helland, Sandra Hutchins, James Lephley, Bill Taylor, Greg Withee and Charles Wormington represented Grossmont.

## Astro Wives Slate 'Membership Coffee'

Astro Wives' Club will hold a casual "membership coffee" at 10 a.m., June 5, in ARA Clubhouse.

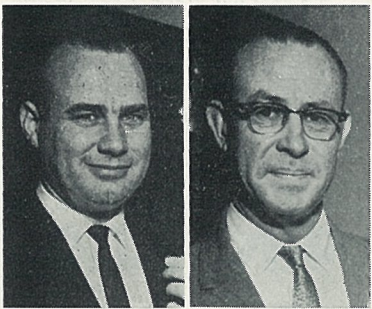
All present club members have been asked to attend, and to bring as guests other Astro wives who may be potential members. (A prize will be awarded to the best "recruiter.")

"Astro wives interested in the club need not be accompanied by a member to attend the coffee," said President Martha Buchan. "All are welcome."

Additional information is available from Mrs. Buchan, 278-8706.



## Log Book Entries



Joining ranks of 25-year veterans at GD/Astro are J. C. Connor, left, Dept. 480-0, and C. V. Spear, Dept. 141-2.

## Service Emblems

### MAIN PLANT

Service emblems due during the period May 1 through May 15.

Twenty-five year: Dept. 143-7, Coral M. Tyner; Dept. 210-0, J. W. Blau-meyer.

Twenty-year: Dept. 400-0, H. L. Williamson; Dept. 403-0, C. C. Pope; Dept. 504-3, L. E. Hanson; Dept. 515-0, H. E. Wright; Dept. 573-3, A. C. Rich-ards; Dept. 718-0, H. E. Stacey; Dept. 953-2, R. J. Graham; Dept. 975-0, V. L. Allwardt.

Fifteen-year: Dept. 322-7, E. W. Lind; Dept. 382-1, R. D. Courtney; Dept. 631-1, R. J. Blake; Dept. 663-4, W. C. Junge-mann; Dept. 759-0, F. A. Silvas; Dept. 835-1, D. N. Nordeck.

Ten-year: Dept. 143-2, P. J. Asprien Jr.; Dept. 147-2, J. L. Winger; Dept. 156-0, Joseph Ragusa; Dept. 250-5, Ar-turo Payan; Dept. 251-1, Carl Bruns; Dept. 324-7, R. A. Clement; Dept. 334-2, W. K. Crossley; Dept. 380-1, J. D. Kring Jr.; Dept. 399-4, D. B. Rodger.

Dept. 401-1, W. M. Moseman; Dept. 402-1, N. J. Poulin; Dept. 451-0, R. B. Hollingsworth; Dept. 452-0, E. L. Mudge; C. L. Singer; Dept. 454-0, Tom Nakashi-ma; Dept. 596-0, S. J. Tomaiko; Dept. 632-5, J. M. Varner; Dept. 634-1, B. S. Nordahl.

Dept. 731-0, Tony Penko; Dept. 756-0, C. W. Lacy Jr.; J. L. Levesque, R. D. Renick, J. P. Sharkey; Dept. 758-0, Roy Spencer; Dept. 759-0, C. J. Hebert, J. W. Nessem; Dept. 781-0, Joyce C. Gregory; Dept. 833-1, Fred Crivello; Dept. 835-3, D. M. Lamb.

## Papers Presented

BOWYER—James, Dept. 596-7, "Con-densation of Water Vapor with Expand-ing Nozzles," Western States Section, Combustion Institute, San Diego, April 29, 30.

MULLEN—J. E., Dept. 663-5, with Mc-CARTY, C. D., Dept. 376-5, "Weighing the Atlas Silo Crib," Society of Aero-nautical Weight Engineers, St. Louis, Mo., April 29-May 2.

NOON—E. L., Dept. 580-5, with AB-SHIER, D. G., Dept. 376-1, "Radiation Effects in the Polyatomic Solid System of Stainless Steel . . ." Electro Nuclear Conference, IEEE, Richland, Wash., April 28-May 1.

SALZER—H. E., Dept. 591-0, "Nu-merical Integration Employing Overdif-ferentiation," American Mathematical Society Meeting, New York, April 29-May 2.

## Personals

### MAIN PLANT

Many thanks to all our friends at GD/Convair and GD/Astro for your kindness and prayers upon the death of my wife.

"Tex" Dyches and Biff Birmingham, Ala.

Thank you for your kindness and sym-phony upon the death of my husband, Glen Ellis.

Mrs. Irene Ellis (Dept. 521-6) and family.

Your kindness and sympathy upon the death of my husband, Earl (Dept. 860-0) is deeply appreciated.

Mrs. Earl Sheeran and family.

## Deaths

### MAIN PLANT

CORDOVA—Lucio, Dept. 451. Died May 3.

### VANDENBERG AFB

NIX—Clifford J. Jr., Dept. 576-4. Died April 25. Survived by wife, Ardis.

## Births

### MAIN PLANT

DINKEL—Daughter, Constance Diane, 8 lbs., 7 oz., born April 23 to W. D. (Dept. 783-0) and Geraldine (Dept. 250) Dinkel.

LEHRER—Daughter, Gail Elizabeth, 6½ lbs., born March 2 to Mr. and Mrs. Gerald Lehrer, Dept. 376-4.

MILDICE—Son, Mark William, 8 lbs., 7 oz., born April 13 to Mr. and Mrs. James Mildice, Dept. 967-3.

ROGERS—Son, Michael Joseph, 8 lbs., 10 oz., born March 13 to Mr. and Mrs. Alan Rogers, Dept. 143-2.

TRAXLER—Daughter, Denise Match-ell, 6 lbs., 8 oz., born April 5 to Mr. and Mrs. Bob Traxler, Dept. 142.

VALDEZ—Daughter, Veronica A., 7 lbs., 4 oz., born April 22 to Mr. and Mrs. Augustin H. Valdez, Dept. 733.

# General Dynamics NEWS

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## MARINER FLY-BY SLATED FOR MARS

Ten experiments have been se-lected by the National Aeronau-tics and Space Administration (NASA) for a Mariner fly-by of the planet Mars later this year.

Spacecraft and missions slat-ed are based directly on technolo-gies developed for the highly suc-cessful Mariner II fly-by of Ven-us made during 1962. This was powered by an Atlas booster and an Agena B stage.

One objective of the Mars mis-sion will be to determine whether or not life may exist on Mars. An attempt will be made to take high quality television photo-graphs of the planet's surface and to obtain information on pos-sible magnetic fields, trapped par-ticle regions and possible cos-mic dust close to the planet.

Other experiments will investi-gate the magnetic fields, flux of charged particles and the density and distribution of cosmic dust in interplanetary space.

Some of the nation's top scien-tific and educational institutions are expected to take part in the experiments.

## GD/Astro Physician Picked for NASA Unit

Robert C. Armstrong, MD, manager of GD/Astronautics' life sciences section, has been select-ed for a research advisory com-mittee on biotechnology and hu-man research by NASA.

The committee, composed of leaders in many fields, will work through NASA's Office of Ad-vanced Research and Technology, meeting about four times per year.

Members were selected because of "technical ability, experience, recognized leadership in a special field and interest in serving the government."

## GD/Astro Appoints Associate Counsel

Richard L. Peck has been named associate counsel at Gen-eral Dynamics/Astronautics, re-ported to H. Cushman Dow, chief counsel.

He replaces William Duerksen who has been assigned to ma-terial contracts.

Peck has an extensive legal background having served for-merly as chief counsel for Scott Paper Co.; on the legal staff at Ryan Aeronautical; as a trial lawyer for the San Diego City Attorney's office; and more re-cently with a San Diego law firm.

## Lunch Hour Movies Continue at Astro

Free lunch hour movies are con-tinuing at GD/Astro under spon-sorship of Astronautics Manage-ment Club.

The club is showing "The American Adventure Series" of sound motion picture films in Bldg. 17. Different films are shown several times each day except Thursday. Showings are at 11:05, 11:35, 12:05 and 12:35. Employees may bring their lunch-es to the showings in Room 3.

## Retirements

### MAIN PLANT

FOX—W. G., Dept. 330-2. Seniority date, Feb. 16, 1951. Retired May 5.

McDOWELL—W. H., Dept. 250-1. Seniority date, Jan. 5, 1951. Retired April 30.



STIFF ENFORCEMENT—Plant 19 transportation employees J. R. Schleiger and Bill Glasser, foreground, are briefed in proper use of yellow "move" tag and red "hold" tag by Transportation Super-visor Jack Orton and George DiMatteo as part of increased effort toward proper material handling procedures.

## 'Red Tag' System Emphasized In Material Handling Drive

"If it's not properly prepared to be moved—it won't be."

That's the word at General Dy-namics/Astronautics, as a divi-sion-wide effort to improve ma-terial handling operations con-tinues.

The new emphasis in this area resulted when misuse of yellow "move" tags was singled out for correction by two of the five ma-terial handling Action Task Groups (General Dynamics NEWS, April 17) strategically located throughout GD/Astro fa-cilities.

The move tag, formally known as "Delivery Order," Form A1290, is used as an instruction for transportation (Dept. 250-5) per-sonnel to move the parts and ma-terials to which it is attached.

Unless they are properly pack-aged and the move tag is fully and legibly completed, items may be improperly handled or routed—costly in either case.

To prevent this, transportation employees have been instructed to inspect carefully items tagged for move.

If, in their judgment, an item is unsafe to move, drivers will attach another tag—this one red.

The red tag (Form A1279, "Rejected for Move") will indi-cate that the item cannot be moved because it is damaged, im-properly loaded, poorly protect-ed, or because shipping instruc-tions are improper or incomplete.

Supervisors responsible for "red-tagged" items will be noti-fied so they can correct discrep-ancies.

In a material handling bulletin being distributed to all GD/Astro supervision this week, N. D. Baird, material handling section supervisor (Dept. 290-1), listed supplemental instructions for pre-paring items to be moved.

"Before tagging material for move, remove all old delivery tags," he said. "If the material has unique preservation require-ments, unusual bulk, quantity, fragility, etc., notify the recipient so he can prepare to accept the

material without delay."

Transportation personnel have also been instructed in the im-portance of their role in proper material handling.

"When you pick up an item, handle it as if it were your own new color TV set," Supervisor Jack Orton told Plant 19 em-ployees. "Remember that many of the items we handle are more fragile and many times more cost-ly than the finest of television sets."

## Cost Reduction Award Okayed

(Continued from Page 1)

CIPs are approved receive a letter of commendation which is placed in their personnel record. They also become candidates for the annual President's Award.

Hourly employees receive cash for accepted ESs.

When estimated net savings from an ES exceed \$50 but are less than \$1,500, a single payment of 10 per cent of the savings or at least \$10 is made.

On ESs saving more than \$1,500, first payment is based on a scale ranging from \$100 to \$2,500. (Lowe's ES, for example, earned him an initial payment of \$250.)

Six months after installation, savings are re-evaluated, and a second payment is made to bring the total award to 10 per cent of the adjusted net savings for the first year of use.

Organization and systems' cost reduction group is now working to reduce a backlog of sugges-tions accumulated while ES/CIP programs were suspended pend-ing revision.

Once this has been accom-plished, suggestions from both hourly and salaried employees will be processed in a fraction of the time required under the pre-vious system.

## 'We Can Build The Best Plane,' Says Lewis

(Continued from Page 1)

a superior weapon system, in the shortest time period and at mini-mum cost.

"Grumman Aviation Engineer-ing Corporation has had at least as distinguished a record in its production for the Navy's air re-quirements. Since 1930, Grumman has produced over 25,000 aircraft of which 23,500 were carrier-based fighter or attack air-craft . . .

"I believe there can be no question about the capability of the General Dynamics/Grumman team with its associated major subcontractors, to deliver to the using services an aircraft that will meet their highest require-ments, immediately and for the decades following.

"The program for the develop-ment and testing of the TFX was established in its present form by the military services after long and careful analysis. Twenty-three aircraft are what the Air Force and the Navy decided they needed to test and develop the design.

"This program, as established, formed the basis around which a long and hard competition was held, one that saw continuing process of design refinement. We have to assume this method of competition was selected from al-ternates as being the best suited to achieve the objectives of this complex weapon system.

"We won that competition, and have been contractually com-mitted since December, 1962 un-der a fixed price incentive con-tract to design and develop the TFX within a very limited time and in accordance with very de-manding specifications.

"As of this time we and our principal subcontractors have sev-eral thousand people hard at work in order to meet our con-tractual obligations. Important decisions with respect to design, tooling, and the like have been made. A number of major sub-contracts have already been let; many others are in the final stages of selection. Special ma-chinery is being ordered. Substan-tial progress has already been made in such critical areas as wind tunnel and component test-ing. We expect to start ground tests in months . . .

"While the ultimate decision is one for the Department of De-fense to make, we believe that to interfere with the momentum of the existing program would be wasteful of the work already ac-complished, and would delay sig-nificantly the operational date for the TFX.

"I have complete confidence that we can and will deliver to the users a weapon system that will give the United States a tac-tical air capability second to none. I believe that the design we have chosen represents the best and most straight-forward approach to the TFX requirements and that it can be built for the least total pogram cost . . ."

## Hartwig Transferred To Electric Boat

R. C. Hartwig, chief of systems and procedures and data process-ing at General Dynamics/Con-vair, transferred the first of this month to Electric Boat Division as manager of systems and pro-cedures.

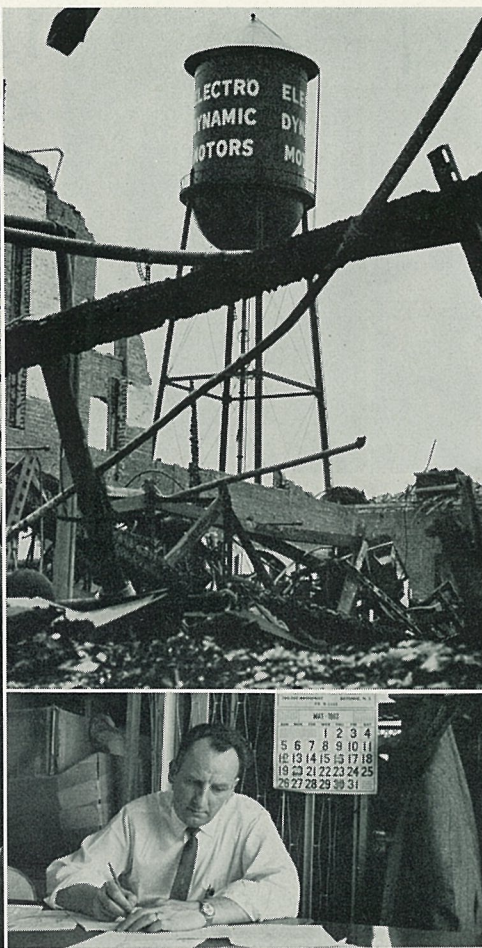
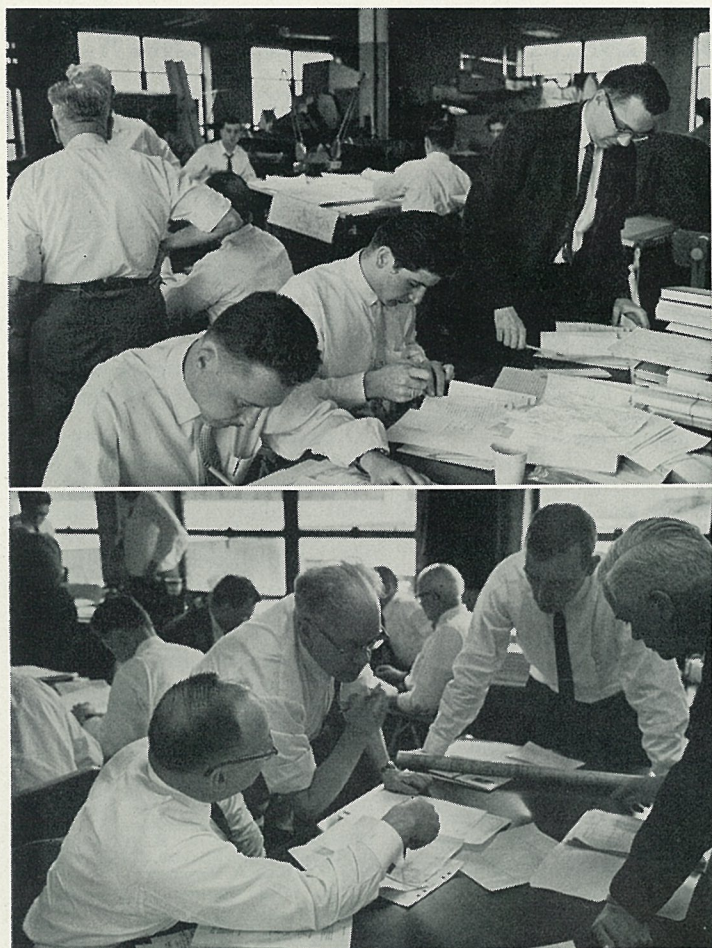
Hartwig has been with Gen-eral Dynamics Corporation since 1955 when he joined GD/Fort Worth as manufacturing engi-neer. He transferred to GD/Con-vair in 1961 in applied manufac-turing and research and was pro-moted to manager of systems and procedures and data process-ing early in 1962.

For the time being, G. O. With-em, chief of data processing, and B. W. Kahla, chief of systems and procedures at GD/Convair, will report directly to W. R. Bruce, director of operations.



AIR FORCE HONORS—H. R. Juorud, left, and J. W. Koljonen of Air Force Audit Office at GD/Astro display 20-year federal service certificates presented to them recently by Resident Auditor G. L. Wilson, right.





**CARRY ON!**—When fire destroyed Bayonne, N.J., plant of Electro Dynamic Division of General Dynamics, personnel moved into nearby quarters offered by Englander Co., mattress manufacturers. In lower left photo, Walter A. LaPierre, manager of research and development, (right), confers with staff. At lower right, Sam

De Nisi of sales telephones customer, assuring that commitments will be met. In lower center, Nick Kaminsky, engineering layout man, achieves degree of privacy by using bedsprings as partition! Water tower (top center), although still standing after fire, was damaged by searing flames.

### F-102 FIS Nominated For 5th AF Award

An F-102 Air Force squadron, the 4th Fighter-Interceptor Squadron at Misawa, Japan, has been nominated by the Fifth Air Force for a performance award for the third quarter of fiscal year 1963.

This is the second successive nomination for the 4th FIS, and its third in a year, reports A. C. Shedrick, GD/Convair field service representative.

The 4th FIS was cited for special improvement in training accomplishments, for the high skill of its pilots, and for its outstanding safety records.

### 990 Sets Another Record For Speed

A Convair 990 set another speed record the latter part of April between San Diego and Chicago. The American Airlines' Astrojet sped cross-country in 2 hours, 41 minutes, 45 seconds, shaving seven minutes from the previous record.

Two General Dynamics men, H. P. Williams, GD/Convair manager of value control, and F. J. Traversi, GD/Astro vice president-administration, were aboard to testify to the speedy flight.

## Electro Dynamic, Plant in Ruins, Shows Fighting, Come-Back Spirit

(Continued from Page 1)  
offered by Bayonne civic officials and many other sources.

At the Sunday morning meeting, task forces were formed to explore all possible means to get the division functioning as soon as possible. Later in the day, department heads met with staffs to give them specific missions.

At this point, "Operation Phoenix" had no headquarters, but Electro Dynamic's next-door neighbor, The Englander Co. gave the division a home.

A manufacturer of bedding equipment, Englander lost a warehouse in the fire but its main building was intact. A storage area was cleared for temporary offices, and additional space was obtained in downtown Bayonne.

"Englander has been wonderful to us," a division executive commented. "They gave us a big helping hand when we needed it most."

Leonard R. Allen, manufacturing services manager, set about equipping offices. Folding tables were converted to desks. Telephones were installed and a temporary switchboard was set up in time to receive calls at the opening of business on Monday. International Business Machines Corporation loaned typewriters

and dictating machines to supplement similar equipment from the Corporate office. Duplicating equipment was supplied by American Photocopy Co. Calculators were rented. The caterer who had run the division cafeteria made arrangements to feed employees with a mobile unit. Stationery and office supplies were purchased.

As early as possible on Monday, William D. McCarthy, plant superintendent and industrial relations manager, met with employees to fill them in on the situation and to tell them about measures being taken to assist them in the weeks ahead. McCarthy worked closely with officials of the union, Local 1035 of the United Automobile Workers, who had offered assistance immediately.

The major problem confronting the division was reconstructing records lost in the fire, especially those of the engineering and sales departments. Calls went out to customers and suppliers who cooperated by duplicating their records and sending copies.

Pattern makers who had bid on jobs over the last ten years sent in their copies of engineering drawings. Some 10,000 water-soaked drawings were eventually retrieved from the ruins and hung up around the office to dry.

New drawing boards and drafting equipment were delivered within two days.

Members of the sales force fanned out across the country or contacted customers by telephone to keep them advised of pro-

gress. Salesmen worked with customers to establish realistic priorities so that the most urgent orders could be filled readily when production could be resumed.

All possible methods of production, including sub-contracting of some work to other manufacturers, are being weighed.

The purchasing department canvassed suppliers to determine how quickly new equipment could be obtained once operational plans were firmed up.

The comptroller's department and insurance specialists in the Corporate office assembled comprehensive data needed to expedite insurance claims.

Although "Operation Phoenix" is a round-the-clock, all-hands evolution that continues through weekends, morale is high. Harris Shapiro, vice president-engineering, said, "I'm astonished at what has been accomplished. I've always taken pride in this operation but never like this. Our people have been fantastic."

A veteran draftsman, surveying the twisted confusion of steel girders and rubble that had been the plant said wistfully, "It's hard to believe — you look out the window and see that." But his mood was a transient one and in a matter of moments he was commenting in words that sum up the spirit behind "Operation Phoenix," "We'll make it."

President Carey emphasized that all commitments to customers would be met and that deliveries on orders open at the time of the fire would be made as quickly as possible.



**COMPUTER GATHERING**—John L. Lombardo, general manager of GD/Electronics-SD (far left), welcomes Robert E. Moore of Corporate staff, coordinator of GD Computer Panel meeting in San Diego. Others, from left, are A. E. Andress of GD/Astro; J. G. Lewis, GD/Pomona; R. G. Bond, GD/E-SD; L. H. Loehr, Stromberg-Carlson; T. S. Kennedy, Canadair Limited; K. A. Bridgeman, GD/E-Rochester.

## Standard Computer Procedures Among Dynamics Divisions Goal

Standardization of all computer documentation within General Dynamics Corporation was approved unanimously by some 50 delegates from nine Corporate divisions at the General Dynamics Computer Panel last month.

Panel sessions were hosted by GD/Electronics - San Diego, with Thomas Kennedy of Canadair Limited as general chairman.

G. O. Withem of GD/Convair, member of the panel's outgoing executive committee, drew attention to the necessity for a satisfactory and workable computer documentation procedure for all General Dynamics divisions so that information can be interchangeable at all times.

In addition to manpower savings in reducing duplication of programming efforts, standard documentation would greatly ease the task of transmitting data on programs within the company, he explained.

Implementation of the adopted resolution will be the responsibility of the Corporate systems department under Robert E. Moore, GD manager of systems and procedures and data processing.

Other business saw the election of a new executive committee for a one-year term. Robert Carson and Robert McWhorter of GD/Fort Worth form the business and scientific team representing the Western divisions. Ralph Fragola and William Peirce of Electric Boat were chosen as the Eastern team.

They replace the first executive committee of Withem; Dov Abramis, GD/Pomona; Kennedy of Canadair; and A. J. Van Woerkom of Electric Boat.

Panel meetings to exchange information on computer operations and developments are held once each year with the next hosted by Electric Boat in Groton, Conn.

### HELLER HONORED FOR VALUE PAPER

E. D. Heller, manager of value control at GD/Astronautics, was cited at the recent annual convention of the Society of American Value Engineers for contributing the outstanding article of the year on value engineering.

Heller received a special plaque for his paper, "Cost as a Design Parameter," published in the SAVE Journal for September, 1962.

Both Heller and M. L. Hicks, GD/Fort Worth vice president-legal and procurement, spoke during the two-day meet, April 25-26, in New York.

Other General Dynamics delegates included F. J. Traversi of GD/Astronautics; H. P. Williams, GD/Convair; C. W. Doyle and Rand Creasy, GD/Fort Worth; C. C. Frankenberger and E. H. Conklin, GD/Pomona; and K. Mikelson and R. F. Stapells of Canadair Limited.



E. D. Heller



"Your qualifications check out, but we'll have to have more information on this nickname of yours . . . 'Old Blabbermouth!'"





**PRIZE WINNERS**—Among best-of-show winners in recent ARA-CRA Garden Clubs' annual Rose Show are (at left) little Carolyn Freedman, 8, with best child's exhibit of Cecil Brunner roses; (at right) Mrs. Herschel Young of Astro Dept. 759-0, best arrangement. In center, Henry Boyd, president of CRA group, and Gene Zimmerman, CRA commissioner, discuss judges' decisions.

### Beginning Bridge Lessons Planned

A new series of beginning bridge lessons tentatively planned to begin in June under ARA sponsorship has been announced by Commissioner Art Saastad.

Class size will be limited, and GD/Astro employees or members of their families wishing to participate have been urged to contact Saastad at ext. 3012, Astro site, for information and reservations.

### GD/ASTRO DAUGHTER WINS MATH CONTEST

**EDWARDS RS**—Pat Bertacchi, 15, daughter of GD/Astro's Primo Bertacchi here, recently captured special honors in mathematics competition.

Pat, one of only three straight "A" students in the sophomore class at Antelope Valley high school, placed highest in a series of math tests. She won the right to represent her class and school in a field day at Occidental College.

Pat Bertacchi

She is a pre-med student.

### Gatterman's 96 Out of 100 Wins Silver Trophy in Trapshoot

Warner Gatterman of Astro shot top score in 16-yd. Class A division of the two-day ATA registered trapshoot sponsored by ARA-CRA Gun Club April 27-28.

Gatterman scored 96 out of a possible 100 to win one of the silver trophies.

Another General Dynamics' contestant, Howard Jacklin of GD/Electronics, took home a silver chafing dish for his prowess in the shoot-off to break a 88-tie with Carl Haynes in the 22-27-yd. handicap event on Sunday. Jacklin's score in the sudden death shoot-off was 22 out of 25. Haynes scored a 20.

Other winners in Saturday matches were: 16-yd. Class B, J. H. Smith, 99; Class C, Carl Cost of Aetna Insurance, 90; Class D, Stan Eggers, 96. Handicap doubles was won by J. H. Smith, 94. Lois Smith topped ladies' handicap 18-21-yd. event with a 93.

Sunday winners were: 16-yd. Class A, Jack Babcock of Santa Barbara, 96; Class B, Roy Day, 96; Class C, Eggers, 95; Class D, Theron Hamilton of Brawley, 97. Hamilton went on to take the handicap 18-21-yd. event with a 93.

High junior was Donald Carlson of Hemet, 88. Edna Gatter-

man was high lady with 85. Doubles event was won by Gene Lumsden of South Gate with a 91. Lumsden now holds the doubles champion title for the state following California State Trapshoot results last month.

Next registered trapshoot at the Gillespie Field Range will be this Sunday, May 19.

### Club Graduates 11 In Speech Training

Eleven General Dynamics men were among recent graduates of speechcraft training program conducted by Mt. Helix Toastmasters Club #126.

They included Stan Becker, Dept. 967, Gene Borlin, Dept. 577, Dick Campbell and Bob Martin, Dept. 631, Roy Penny, Dept. 337, Durwood English, Dept. 642, Don Lesney, Dept. 966, H. H. Mekemson, Dept. 526, Waldo Roberts, Dept. 370, and Lloyd Munson, Dept. 634, all of GD/Astro, and Don Bowers, GD/Convair Dept. 6.

Club speechcraft chairman is Jack Fisher, Dept. 526-6, and Tris Wooster, Dept. 577, Jim Johnson, Dept. 967, Chuck Plummer, Dept. 362, Seymour Zeenkov, Dept. 360, all GD/Astro, and Ken Cummins, GD/Convair Dept. 6, served as instructors.

### Astro-Convair Son Honored

One General Dynamics son, at least, is piling up honors faster than he can keep track.

Steven Carl Mann, 16, son of Lavelle B. Mann of GD/Convair Dept. 6-5 and Paul F. Mann of GD/Astro Dept. 853-3, has been selected as the first-place boy student in the United States, out of 1,923 entries, in the Thom McAn Leadership Awards.

The award entitles Steven to a \$1,000 scholarship for any educational expense and an all-expense paid trip to Washington, D.C., and New York City.

In addition, Steven has received a four-year scholarship to Stanford University where he will major in psychology and minor in English. He graduates this June from Lincoln High School with a straight A average.



Steven Mann

### Film Spectacular Discount Offered

Tickets for a performance of the Cinerama spectacular, "How the West Was Won," are available at discount prices for GD/Astro, GD/Convair and GD/E employees.

The showing for General Dynamics folk is at 8 p.m., Sunday, June 2, at Cinerama Theater, 58th and University.

Tickets normally selling for \$2.25 can be purchased at employee services outlets for \$1.80.

## 1,500 Spectators See Rose Show, Astro and Convair Share Honors

ARA-CRA Garden Clubs' joint spring Rose Show was "the best ever," according to Commissioners Everett Henderson and E. L. Zimmerman.

Nearly 1,500 spectators visited the Floral Association Bldg. in Balboa Park on show day April 21 to view the 454 entries. Displays included 396 separate rose exhibits, all grown by members, 40 arrangements, 8 corsages, and 10 children's entries.

Best-of-show honors went to Carolyn J. Buman, Astro Dept. 541-1, for single rose; Walter E.

McVay, Convair Dept. 34-0, three roses; C. J. Lewis, Astro Dept. 250, six mixed roses; F. White, Convair Dept. 115, florabunda; C. H. Splinter, Astro Dept. 759, grandiflora; Mrs. Herschel Young, Dept. 759-0, best arrangement; Carolyn Buman, best corsage of Dutch iris.

Carolyn Freedman, 8, daughter of Astro's Richard Freedman, had best child's entry.

Judges for rose entries were James Kirk, American Rose Society judge; Mrs. Kirk, Dr. Troxell, Sam Middleton, and Al O'Brien of the San Diego Rose Society. Mrs. O'Brien and Mrs. Sam Middleton of the SD County Arrangements Guild judged arrangements, corsages, and children's displays.

Blue ribbon winners were:

One-bloom roses—C. J. Lewis, Mrs. F. White, Carolyn J. Buman, Lora Lee Young, F. White, Stuart Williams, Isabel Cole, H. S. Boyd, Mr. and Mrs. James Sorensen.

Three-bloom roses—Walter E. McVay, Mrs. F. White, Conrad M. Bley, C. J. Lewis, Grace Zimmerman, F. White, Carolyn J. Buman, W. H. Marshall, Mrs. H. Young, Mr. and Mrs. A. E. Hornby, Mr. and Mrs. J. Sorensen.

Three mixed—Carolyn J. Buman.

Six mixed—C. J. Lewis.

Three stems, florabunda—F. White.

Three stems, grandiflora—Mrs. F. White.

One stem, florabunda—F. White.

One stem, grandiflora—C. H. Splinter.

Miniature rose—J. Perry Nerenberg.

Arrangements—Esther Barksdale, Mrs. H. Young, John Bley, Mrs. C. M. Bley.

Corsages—Yvonne McMillen, Carolyn J. Buman.

Children—Carolyn Freedman, Charles Barksdale.

### ARA, CRA Lensmen Join For Contest

ARA-CRA lensmen will meet for their second quarterly contest at 7:30 p.m., May 19 in Photo Arts Bldg., Balboa Park.

Judging of black and white prints and color slides will be conducted.

Also up for discussion will be the group's participation in the 1963 version of Photorama to be held May 26 in the area adjacent to Balboa Park's Conference Bldg.

This annual "photographers' field day" is a combined effort of all San Diego-area camera clubs. The ARA-CRA organization plans to provide a set for this year's event.

### 15 SIGN FOR TOUR OF MEXICO IN AUG.

Fifteen General Dynamics people signed for the de luxe tour to Mexico at last week's initial meeting. However, there is still room for that many more, if they register by the end of this month, said Jim Hardison, GD/Convair Dept. 15, who is organizing the fourth trip for GD tourists.

A second meeting to review tour arrangements will be held next Tuesday, May 21, at 7 p.m. in the Convair cafeteria main dining room on Pacific Hwy.

All Astro, Convair, and Electronics people interested in traveling by train to Mexico City, Acapulco, and points in between are urged to be present. The group will leave San Diego Aug. 16 or 17 and return during Labor Day weekend.

Complete price of \$350 includes transportation by air conditioned train and buses, hotel accommodations, meals, sightseeing, admissions to major attractions, tips.

Deposit of \$35 per person must be paid by the end of May, with balance due before departure.

For information call Hardison at his home phone, 276-5805, evenings.

### 'Iceland' Tickets Offered, Bargain

Discount tickets to "Iceland," 6055 Lake Murray Blvd., are available at GD/Astro and GD/Convair employee services outlets.

They are good for a 35c reduction of regular adult admission, 90c, or junior, 65c, when redeemed at the box office.

### Salvage Schedule For Saturday Set

Schedule for the next four Saturdays at GD/Convair and GD/Astro salvage yards is:

GD/Astro—May 18, June 1.

GD/Convair—May 25, June 8.

### GD/E Volleyballers Topple Ryan Team

GD/Electronics' volleyball team knocked down Ryan, undefeated first-round champs, as second-half play started May 2 for the National League. Score was 15-12, 15-13.

Hi-Lows of GD/Convair were downed by the Wreckers in two matches out of three, 15-6, 11-15, 15-18.

Dynamics of Astro fell before onslaught of C.S.E.A., 15-12, 7-15, 15-12 in first American League matches May 1. Untouchables, also of Astro, beat City Engineers, 15-9, 15-9.

### ASTRO DAUGHTER IN BEAUTY CONTEST

Brenda Diggins, 18, whose mother, Arlona, is in GD/Astro Dept. 960-4, has been selected to represent Ramona in this year's San Diego County "Fairest of the Fair" contest.

### McClure Is Keynoter At Quality Meeting

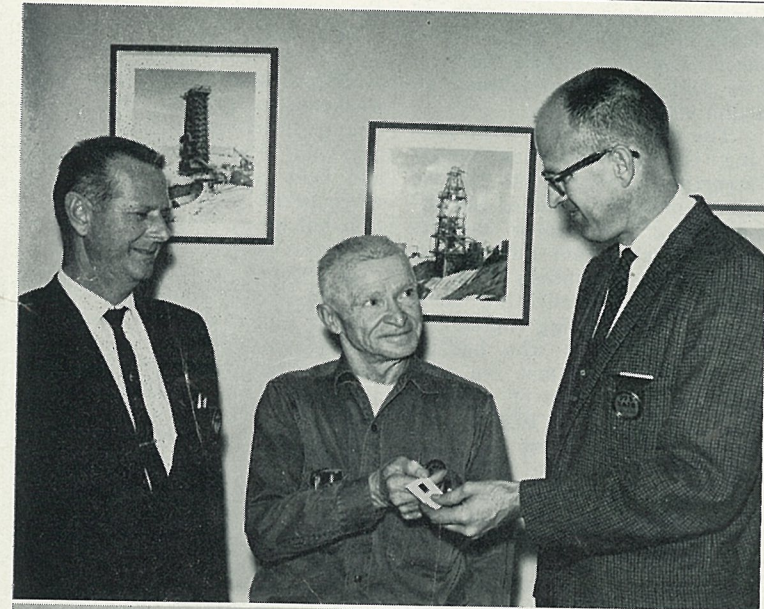
"Highly successful" was an oft-repeated description of the third annual seminar held by the San Diego Section, American Society for Quality Control held April 20 at California Western University. General Dynamics Corporation men played key roles.

J. Y. McClure, board chairman of the ASQ and General Dynamics director of reliability control and quality control, delivered the welcome address stressing "The Progress of the ASQC."

Phil I. Harr, Astro director of reliability control, discussed "Reliability Program Planning for Space Launch Vehicles" and M. R. Sheldon, assistant to Harr, served as co-chairman of the event. Boeing Company's Dr. Leslie W. Ball made a presentation on "Input Contracting and Purchasing."



**QUALITY SPEAKERS**—Among key participants in American Society for Quality Control, San Diego Section, seminar were, from left, Phil I. Harr, GD/Astronautics; Dr. Leslie Ball, Boeing; M. R. Sheldon, GD/Astronautics; and J. Y. McClure, General Dynamics Corporation. Latter is national chairman of ASQC.



**SAFE AND SOUND**—In top photo Primo Bertacchi, who has driven more than 100,000 miles in course of his duties without single violation, receives safe driving award from V. L. Allwardt, chief of test operations—Centaur, at Edwards RS. At left is A. W. Billitti, safety engineer. In lower photo are Felix Rado and Robert S. Green, head of GD/Astro Safety Committees at Vandenberg AFB. Due in large part to committee efforts, GD/Astro at Vandenberg has completed second full year without lost-time accident.



# 'We Can Produce The Best Plane'

(Following is the text of a statement by Roger Lewis, president of General Dynamics Corporation, to the permanent subcommittee on Government Operations, U.S. Senate, made last week in Washington, D.C.)

"Mr. Chairman:

"My name is Roger Lewis. I am President and Chief Executive Officer of General Dynamics Corporation. I was elected to that post in February, 1962, some time after the initiation of the competition which led to the award of the RDT&E letter contract for the F-111 in November 1962.

"I have been associated directly with the aircraft industry for almost 30 years, starting at Lockheed Aircraft Corp. in 1934. Since then I have been active in many phases of production, material control, purchasing, sales and management on programs representing both military and civil aviation.

"To answer your questions in the technical area, Mr. Frank Davis, president of our Fort Worth Division, where the F-111 is currently under active development, is also here.

"Mr. Davis, a former Marine Corps pilot, has been part of the aircraft production operations of this company for 23 years. In 1945, as chief of aerodynamics and flight test at what was then known as Vultee Field Division of Convair, he was the first pilot to fly a turboprop powered aircraft, the experimental XP-81 fighter. In 1947 he was named chief design engineer at Convair's San Diego Division, where he was closely identified with the development of the XF-92A, the world's first delta wing aircraft, and the AF F-102 supersonic interceptor, among other projects. Since 1954, Mr. Davis has been with our Fort Worth Division, first as chief engineer and since 1959 as manager and president of that division. During this period, Mr. Davis has been a key figure in the design, development and production of the AF B-58 bomber, which is still the free-world's only supersonic, four-engine bomber.

"As an accommodation to the committee, I am pleased to be able to say that Messrs. E. Clinton Towl, George Titterton, and Corwin Meyer of the Grumman Aircraft Engineering Corporation are present.

"Grumman Aircraft is our chief subcontractor on the F-111, and our proposal was developed in conjunction with that company. Grumman Aircraft, as you gentlemen are aware, is not only a leading company in meeting U.S. Navy air requirements, particularly for carrier-based planes, but has also built and flown the only variable sweep wing aircraft designed for operational use.

"Mr. Towl, president and chief executive of Grumman since 1960, was one of its founders in 1930. Mr. Titterton, senior vice president in charge of program development, has been with Grumman since 1936, and in the aviation industry since 1926. During World War II, he was chief of production and engineering for that company, and has since directed manufacturing and production of all Grumman's major programs. Mr. Meyer, with Grumman since 1942, is currently director of aircraft development. He was chief test pilot during flight test of the XF-10-F variable sweep wing aircraft in 1952-53. During the year-long testing that successfully demonstrated variable sweep wing technology, Mr. Meyer piloted the plane on 232 flights.

"I appreciate the opportunity the committee has given me to be here today. We at General Dynamics understand the vital interest of this committee both in the proper expenditure of public funds and in the most effective possible defense of this nation. I assure you that we share that interest.

"As you may imagine, I have followed the published testimony over the previous two months of hearings with great interest.

Based on this published material, it seems to me that the emphasis of the testimony has been largely in the areas of capability, cost, and competition. I believe clarification of some of the implications of previous testimony might be useful to this committee.

"The question of capability—that is, the capability to develop for, and deliver to, the using services an aircraft that meets their highest requirements, within an effective time span, and at a reasonable cost—may best be put in perspective in terms of the history of this company.

"General Dynamics is made up of 11 operating divisions in the United States and one major Canadian subsidiary. Of the 11 U.S. divisions, six operate largely in what is generally considered the 'defense' area.

"General Dynamics Corporation came into being under that name only in 1952. However, some of its key components go back more than 60 years.

"One component, Electric Boat Division, the direct predecessor of General Dynamics, delivered to the U.S. Navy its first submarine in 1900. During World War I, Electric Boat supervised the construction of, and delivered to the Navy, 173 submarines. During World War II, we delivered 97 submarines and 399 patrol torpedo boats. Since then we have built the world's first nuclear submarine, and have been the lead yard and prototype builder for most of the Navy's nuclear undersea fleet.

"Another early component, Consolidated Vultee Corporation, became the Convair Division of General Dynamics, and has since grown into four autonomous divisions: Astronautics, Convair, Fort Worth, and Pomona. This component has been producing aircraft, military and commercial, since 1908, beginning originally as the Gallaudet Aircraft Corporation. Convair, in the 30 years between 1923 and 1953, when it became part of General Dynamics, produced no less than 42 different models of aircraft for the Army, the Navy, the Air Force, and commercial carrier lines. These have included sea planes, patrol planes, bombers, pursuit, attack and interceptor aircraft, as well as commercial transports. During World War II, Convair delivered more than 350 million pounds of airframe, approximately 13 per cent of the total national output, or a total of more than 33,000 military aircraft, plus the equivalent of 5,000 more in spare parts. These included the PBV series of flying boats, B-24 Liberator bombers, C-87 Liberator express transport, Valiant trainers and Sentinel liaison planes.

"Much more to the point, however, has been the history of the past decade, since General Dynamics itself came into existence.

"Within that short time span, General Dynamics developed and produced not one but five major weapon systems—simultaneously. These combined programs—Atlas intercontinental ballistic missiles, nuclear submarines and nuclear ballistic missile submarines, B-58 bombers, F-102 and F-106 aircraft, Terrier and Tartar air-defense missile systems—represent a major cornerstone of this country's total defense system. No other company in the world can match that record.

"Today, the F-102 and the F-106 are the backbone of Air Defense Command. The Atlas was the first—and for a considerable time, the only—operational intercontinental missile available to back this country's deterrent stance. As a booster, it has launched all of this country's manned orbital space flights. The B-58 remains the Strategic Air Command's, and the free-world's

only supersonic bomber.

"General Dynamics' Electric Boat Division continues as the world's leading design yard for submarines, and has delivered some 40 per cent of our nuclear undersea fleet. Terrier and Tartar missiles represent important elements of the Navy's air defense.

"Every one of these represented, through their development and production, enormous advances in technology over anything previously considered within the state of the art. In many aspects they continue to represent unmatched technology.

"The advanced technological and scientific capability that made this sweep possible is still intact. We are quite accustomed to taking quantum, rather than merely incremental, steps. We are accustomed to the unique problems associated with the development of a superior weapon system, in the shortest time period and at minimum cost.

"Grumman Aviation Engineering Corporation has had at least as distinguished a record in its production for the Navy's air requirements. Since 1930, Grumman has produced over 25,000 aircraft of which 23,500 were carrier-based fighter or attack aircraft...

"Among a number of Grumman firsts for the Navy were: retractable landing gear, in 1931; the folding wing, in 1937; the swept-wing, in 1951; the area-rule fuselage, and the carrier-based supersonic F11-F-1 fighter in 1954, and the F11-F-1F carrier-based Mach 2 fighter-bomber in 1956.

"I believe there can be no question about the capability of the General Dynamics-Grumman team with its associated major subcontractors, to deliver to the using services an aircraft that will meet their highest requirements, immediately and for the decades following.

"As to the question of competition:

"Throughout our history we have considered ourselves as a weapon system developer, responsive to the requirements of the services. We have gone through periods of national emergency, when thousands of men worked around the clock; we have had lean years when it was a struggle to keep our capability together. Competition has been our way of life. Sometimes we have won, sometimes we have lost. When we have lost, even if we felt strongly that we had presented the better proposal, we analyzed our shortcomings and determined to be better prepared for the next competition.

"We believe in competition. You gentlemen will recall that the year-long competition leading to the award of this contract, first between six and later between two contractors, has been considered the most severe ever applied to any potential weapon system. It has not been easy for us, nor I suspect, for any of our rivals or for the evaluation teams of the services and the Department of Defense. Yet we have felt that this competition, in defining, and refining, the requirements of a weapon system to a more advanced point than had ever before been reached prior to an actual award, was in the best interest of the nation.

"We believe that, as a result of the long process of refinement, the Department of Defense objective of a common airplane for two services has been achieved. Both final proposals represented aircraft far better than could have been attained with less exhaustive procedures.

"This leads to the question of now re-opening the competition on the basis of in-flight comparison of two or four prototypes. Some weeks ago, Mr. Chairman, you advised us that our rival had offered such a proposal. You asked us to submit a parallel estimate of costs. We could only conclude from the request to both companies that the committee has in mind a new competition.

"We have been most anxious to cooperate with the subcommittee and its staff. From the very beginning of the inquiry some months ago, we have responded to all requests levied upon us. In

general, the information we were called upon to furnish consisted of available data bearing on the TFX competition. The information now requested would have to be developed.

"The program for the development and testing of the TFX was established in its present form by the military services after long and careful analysis. Twenty-three aircraft are what the Air Force and the Navy decided they needed to test and develop the design.

"This program, as established, formed the basis around which a long and hard competition was held, one that saw continuing process of design refinement. We have to assume this method of competition was selected from alternatives as being the best suited to achieve the objectives of this complex weapon system.

"We won that competition, and have been contractually committed since December, 1962 under a fixed price incentive contract to design and develop the TFX within a very limited time and in accordance with very demanding specifications.

"As of this time we and our principal subcontractors have several thousand people hard at work in order to meet our contractual obligations. Important decisions with respect to design, tooling, and the like have been made. A number of major subcontracts have already been let; many others are in the final stages of selection. Special machinery is being ordered. Substantial progress has already been made in such critical areas as wind tunnel and component testing. We expect to start ground tests in months...

"While the ultimate decision is one for the Department of Defense to make, we believe that to interfere with the momentum of the existing program would be wasteful of the work already accomplished, and would delay significantly the operational date for the TFX.

"If we have misunderstood the intent of the inquiry, and the committee desires only an order of magnitude figure as a basis of discussion, you already have such a submission. Its validity could be quite easily evaluated for the committee by appropriate independent technical experts.

"One final point—on the question of cost estimates:

"One witness before this committee recently provided a full summary of the cost estimating procedures which are essentially standard throughout the aerospace industry—although the nomenclature may vary somewhat from company to company. As you know, our costing procedures, which I assure you were thorough, have been documented at length to your staff by our representatives.

"However, because both General Dynamics and Grumman have recently built both super-

sonic and subsonic manned aircraft, we have been able to check and validate our estimates against actual program experience.

"General Dynamics has more experience than any other contractor in the production of supersonic aircraft, through the B-58, the F-102, and the F-106. Dynamics-built aircraft have already accumulated more than 50,000 hours of supersonic flight time. We additionally have extensive experience in the development and production of supersonic missiles, through our Terrier and Tartar program, and of hypersonic vehicles through our Atlas and Centaur programs.

"As our associate and major subcontractor, Grumman Aircraft Engineering Corp. adds a wealth of experience with naval weapon systems, such as the supersonic F11F fighter and the A2F all weather attack system.

"Our combined cost proposals were based on knowledge of the complexities of the supersonic flight for both bomber and fighter configurations, land-based and carrier-based, as well as of the problems inherent in the highly advanced technology called for in the F-111.

"There is sometimes a temptation in a hard-fought competition to shave the price on the research portion of a program, where the potential exists for sizable production orders later. We have not done this. Our price is a close one, but it includes a modest profit.

"This will be a fixed price incentive contract. If, as we hope, through careful management we can produce this airplane for even less than the amount we have contracted, the government will receive 90 per cent of such savings, and at the same time be protected against over-runs.

"Since the award of the contract last November we, our associate contractors and our subcontractors, have been working full time on the development of this aircraft. We have had full cooperation from all segments of government and industry involved in this project. The morale of all the people involved in this project is extremely high.

"I have complete confidence that we can and will deliver to the users a weapon system that will give the United States a tactical air capability second to none. I believe that the design we have chosen represents the best and most straight-forward approach to the TFX requirements and that it can be built for the least total program cost...

"Some of the testimony before this committee has created erroneous impressions about our proposal. Certain of these points should be clarified and others brought out. Mr. Frank Davis, President of our Fort Worth Division, is responsible for the development of the F-111 and has a statement to make."

## Dynamics' Design Advantages Given

(Following is the text of a statement by Frank W. Davis, president of General Dynamics/Fort Worth, to the permanent subcommittee on Government Operation, U.S. Senate, made last week in Washington, D.C. The word "deletion" has been used to indicate security excerpts.)

"Mr. Chairman:

"I am Frank W. Davis. I have been Manager of the Fort Worth Division of General Dynamics Corporation since 1959, and President since 1961. Prior to that I was Chief Engineer.

"I am a graduate of California Institute of Technology, and have been honored with a degree of Doctor of Science from West Virginia University for contributions in the field of aeronautics.

"I received my wings as a Naval aviator at the Naval Air Station in Pensacola, Florida, in 1937, and served in fighter and dive bomber squadrons of the U. S. Marine Corps.

"I joined one of the predecessor companies of General Dynamics in 1940 as Engineering Test Pilot. I have flown or flight-test-

ed some 75 different types and models of aircraft, including fighters, dive bombers and attack bombers.

"During my 23 years with General Dynamics I have had, at one time or another, engineering design responsibilities for fighters, missiles, bombers, seaplanes and commercial aircraft. I still fly as time and circumstances permit, and have flown a TB-58 at Mach 2 speed at altitude and at Mach (deletion) on the deck.

"My most recent and relevant experience for the TFX is in connection with the F-102 and the B-58, both supersonic manned aircraft; the first an all-weather fighter, the second a bomber.

"My design responsibilities have included many 'firsts.' At

(Continued on next page)



(Continued from page 1)  
some stage in their development I have been in responsible charge of design and/or test of the following:

- first intercontinental ballistic missile,
- first turboprop fighter,
- first vertical take-off fighter,
- first delta-wing fighter,
- first supersonic bomber.

"For General Dynamics I am now charged with total responsibility for TFX.

"I do not hesitate in the least to tell you that the General Dynamics TFX is the superior weapon system, will cost less to produce in the planned quantities, and better meets the stated requirements of the Secretary of Defense for a bi-service aircraft. The testimony to date reflects that in the final evaluation, the Source Selection Board had before it weighted scores which in the aggregate favored General Dynamics by 8.2 points, adjusted down to .3 of a point. In my judgment, the General Dynamics TFX has a greater superiority than is reflected in these official scores in its favor.

"First, let's talk about the airplane itself.

#### BASIC DESIGN MISSION

"The basic USAF mission of the TFX is the Tactical Air Command (TAC) (deletion) mission. 6/7 of the airplanes are planned for this purpose. In this mission, the airplane takes off and flies (deletion) until it reaches the target and drops its bombs. It then (deletion) returns home. This is a contractual requirement and is identified in the statement of work as the 'Basic Design Mission.' This is the mission that was most difficult for the airplane designers to meet. The General Dynamics airplane, as evaluated by the Air Force, offers (deletion) more range than the Boeing airplane does, in this, the basic design mission.

"As shown in earlier testimony in terms of a few miles difference in dash, the true significance of this element of performance has been obscured. Here is why. The enemy's defense is assumed by the military to be so many miles deep. You need the (deletion) dash to get through. This is where you may get shot down. You would like to be able to operate from a base well back from the target. If you cannot because of lack of range on this mission, you will have to abandon the target, move closer to the target, or be prepared to accept more losses because of your vulnerability at lower speeds in the enemy's defended area.

"How much further away does the Air Force say the General Dynamics airplane may be based? (Deletion) further, a direct result of admitted superior (deletion) performance. Superior (deletion) design results in lower fuel consumption during the dash. The fuel saved is used to extend the (deletion) mission. This advantage becomes greater if the enemy decides to increase his depth of defense.

"If you utilize actual bases and actual targets in Europe or Asia to demonstrate the value of this additional range, the superiority of the General Dynamics TFX is clearly revealed. It covers 19% more targets in Europe and 14.5% more in Asia. This is a direct measure of wartime combat effectiveness. That is what you and I are paying for. Thus, the General Dynamics TFX gives you more combat effectiveness per dollar.

"This is the basic TAC mission; this is where the airplane and engines work hardest to succeed; this is where General Dynamics concentrated and was found superior; and this is the mission where the most growth potential is needed because it is the enemy who decides how deeply to defend his targets. If he increases his defense by 25%, the General Dynamics range advantage increases from (deletion).

"A basic principle of efficient supersonic aerodynamics is to have the smallest frontal area to minimize wave drag. From the testimony of the evaluation group, it was stated that the General

Dynamics design adhered best to this principle. The larger frontal area of the Boeing design would require basic and fundamental redesign to improve. Time and money are required to do this.

"This is the true significance of General Dynamics admitted superiority in the supersonic design of the TFX. This is the guts of the whole design problem for the Air Force airplane. This advantage has been obtained only by the most careful shaping of the fuselage and wing, and by carefully positioning the engine inlets for maximum efficiency.

#### FERRY RANGE

"The erroneous impression persists that in ferry range capability with external tanks the Boeing airplane exceeds that of General Dynamics by 1,100 miles. The record should be set straight here. Ferry range without external tanks is the only specific ferry range requirement in the work statement. General Dynamics meets the range requirement comfortably as evaluated. And as we predicted, ranges in excess of those shown on Exhibit 29 claimed by Boeing are now known to be attainable by our airplane.

"In the time honored manner you can hang additional external fuel tanks on the airplane until a reasonable maximum operational weight is reached. This maximum operational weight is reached long before the physical restraints are reached for installation of external tanks. In other words, the structural strength limits the weight that is carried and consequently the ferry range that can be achieved, not the number and size of tanks that can be physically accommodated. There is more than adequate room available on the General Dynamics F-111 wing to add (deletion) more hard points if desired. As brought out in previous testimony, General Dynamics provided strength in its structure and landing gear to take off with 10,000 pounds more weight than Boeing. When operating to the same structural margins of safety the General Dynamics airplane ferry range with external fuel will substantially exceed that of Boeing. Exhibit 29 should be corrected to reflect this fact.

"In addition, General Dynamics has designed into its airplane the capability of installing the (deletion) longer Navy wing tips on the Air Force airplane which will extend the ferry range by a substantial increment. As an additional bonus the sturdier Navy landing gear is interchangeable with that in the Air Force airplane and can provide added strength for unrestricted operation from rough fields at greater than normal weight.

"As we will discuss later under commonality, General Dynamics designed the basic structure of the wing and fuselage to be identical. The longer wing tips are bolted on the Navy airplane and a different nose is used. The Navy landing gear is stronger and heavier to take carrier landings but is interchangeable with the Air Force gear. The fuselage and attachments for either version of the General Dynamics airplane are strong enough for the greater loads occasioned by carrier landings.

#### BOMB LOADS

"Bomb load has likewise been portrayed as a significant issue; in reality, it is not. The requirement was for a certain number of external hard points for attaching bomb racks, and a certain bomb load. General Dynamics proposed a practical load well beyond the requirements and consonant with the landing gear strength capability for TFX type operation. You will recall that we provided strength in the Air Force structure and landing gear for 10,000 pounds more weight than did Boeing.

"In practice the machine would be loaded down with whatever external bomb load was desired for a particular situation so long as the strength of the airplane was not pushed too far. It was expected that an experienced technical evaluation team would find no cause to make an issue of the specific typical loadings shown in the proposal document, and indeed they did not.

"The simple fact is that either airplane can greatly exceed bomb load requirements. It is also reasonable to expect that the General Dynamics airplane could be pushed to greater overload because of the greater load carrying capability of the structure and the option exists of putting on the Navy landing gear at any time that it might be desired to further increase the strength for rough field operation at extremely high gross weights as previously mentioned.

"Significantly, Source Selection Board members in recent testimony confirmed that the ferry range figures with external fuel and the ordnance loads shown on the Committee Staff's chart (Exhibit 29) were not developed under similar ground rules and they stated that these items were not evaluated to determine ultimate capability. Since the chart has created the impression that the Boeing design was better, the record should be set straight by correcting Exhibit 29 to show that the General Dynamics TFX could carry 10,000 pounds more load than Boeing.

#### LANDING DISTANCE, THRUST REVERSERS

"Landing distance has also become an issue. The evaluation shows that either airplane meets the requirement with ample margin. The shorter roll reported for the Boeing airplane is based on the proposed use of a thrust reverser.

"General Dynamics likes the idea of thrust reversers for stopping on the ground—it uses them on its commercial airplanes for that purpose. But in the TFX this is not the whole problem. Satisfactory braking in the air for combat operations is also required. This complicates the thrust reverser development problem and makes them heavier. The thrust reversers for the TFX must be able to stand up in service and operate very reliably even though its parts must frequently withstand the severe vibration and 3,000° temperature of afterburner operation not required in transport applications. In addition, it must not warp or bend enough to allow even a small degradation in nozzle efficiency, for it is intimately associated with the already complex and sensitive nozzle system of the TF 30 engine. A 3% degradation in nozzle efficiency, altogether possible with a poor thrust reverser installation, would sacrifice 25% of the required (deletion) dash distance. I doubt that TAC would accept that.

"Mr. Jordan of Pratt & Whitney discussed the problems of developing a thrust reverser for the TF 30 engine at length. We have also discussed the problem with the Rohr Corporation, builders of thrust reversers. We do not believe a satisfactory thrust reverser will be developed in time to meet the needs of the early TFX airplanes.

"General Dynamics did not want to be caught off schedule on the important air braking requirement so it proposed the tried and true dive brake system and used wheel brakes—the simplest system for stopping on the ground. As evaluated, this provides a landing distance you can overshoot by ½ without exceeding the requirement. If and when a satisfactory thrust reverser is developed, and we are anxious to aid in such development, the General Dynamics engine installation design and airplane balance will allow for its installation.

#### REACTION TIME

"The claim that the General Dynamics airplane has a reaction time twice that for Boeing is not supportable. The reaction time for the TFX, as stated in the requirements, is counted from a standby alert—not a cockpit alert. Standby alert means the crew is in the ready shack. Typical TAC operations were studied; the time claimed for Boeing is equal to that normally required for TAC crews to run from the ready shack to the airplane plus the time normally required to taxi from the parking area to the end of the runway. This would leave no time for engine start and cockpit check. Therefore, the airplane could not react in the time shown.

Exhibit 29 should be revised to show reaction time on a comparable basis consistent with the TFX specification.

#### LOITER (PRIMARY NAVY MISSION)

"Loiter on station is the primary mission for the Navy. Two types of loiter mission are considered. The first of these is to loiter a short distance out from the ship for several hours. Both airplanes were evaluated as meeting this requirement. The second mission, which was assumed to take the same amount of fuel, requires shorter loiter time farther out from the ship. General Dynamics was evaluated as deficient on this mission. There is apparently an error in the evaluators' calculations which would have removed part of the deficiency but that is not important. What is important is that there is plenty of room left in the fuel tanks to add more fuel because General Dynamics has made its Navy wing a fuel tank, the same as its Air Force wing. It is available for added fuel to meet the stated loiter requirements or more. With the additional fuel, General Dynamics meets the requirements comfortably. The testimony indicates no requirements for redesign. Thus, there is no problem with the General Dynamics airplane meeting either one of these requirements. Exhibit 29 should be corrected to show the General Dynamics airplane does meet these loiter mission requirements.

#### INTERCEPT MISSIONS

"A word on intercept radius. The intercept radius figures shown to the Committee were not evaluated by the Air Force. Since the intercept mission is supersonic, you would expect the General Dynamics airplane, which was evaluated best in supersonics, would be better for the intercept mission. Boeing's figures show it the other way around. This appears to be a case of unjustified optimism. Exhibit 29 should be corrected to show a 'plus' for General Dynamics and the specific figures should be deleted since they are not appropriate comparisons.

#### INLET LOCATION

"What about selection of inlet location? An upper inlet may be better from a foreign object damage standpoint. That is, things are less likely to be thrown into the inlet which might damage the engine. But from substantially every other standpoint the lower inlet is better. The lower inlet meets the requirement which is to provide 'positive'—and that word comes directly from the work statement—positive assurance that erratic or distorted air flow to the engine will not result in any airplane flight condition. Mr. Stack indicated it might be necessary to limit the angle of attack at which the Boeing airplane could fly because of having the inlets on top. This could be extremely serious in high altitude operations and could result in engine stoppage during spins or other high angle of attack maneuvers. The upper inlet requires that the air be deflected down into the engine. A bend is also required in the tailpipe. These changes in the direction of air flow cause inefficiency.

"The lower inlet improves the inlet efficiency, thus aiding in providing General Dynamics superior supersonic performance. It simplifies on the ground inspection of the duct and the engine compressor face—and experience shows a substantial amount of foreign object damage actually comes from things left in the duct after work has been done on the airplane. It facilitates engine removal and makes it easier to change the installation to accept future engine developments. Testimony shows that the evaluation group rated General Dynamics better in propulsion system installation of which the inlets are a part.

"Troubles with an upper inlet which have to do with its characteristics in flight may not show up until after flight testing starts. Then changes are expensive and time-consuming. Conversely, the problem of protecting the engine from foreign object damage with the lower inlet can be worked out on the ground inexpensively rather

than in flight. A quarter scale model has already been tested which indicates the effectiveness of measures being taken by General Dynamics to prevent foreign object damage.

#### SINGLE WHEELS VS. DUAL WHEELS

"There was some testimony in favor of dual wheels instead of the single wheels as proposed by General Dynamics on the main landing gear. The choice here involves many factors, including the shape and size of the space available for wheel stowage, the type of surface from which the airplane must operate, cost, weight, and brake capacity, to name a few.

"Some of the testimony dwelt on the difficulty of changing a wheel and tire weighing 300 pounds as compared to one weighing 130 pounds. The testimony suggests that the wheel and tire would be handled by muscle power alone. It ignores the fact that simple handling slings are used to solve the problem of lifting and positioning the wheel and tire either with or without the use of standard bomb loading equipment. These slings would be used whether the wheel weighed 130 pounds or 300 pounds. Also, we have devised a method of changing a wheel and tire without a jack, should the unlikely situation occur of having spare wheels and tires, but no jacks. Special equipment is required with either type wheel to get the tire on and off the rim.

"A point which has apparently been overlooked is that the single wheel operates with a lower pressure tire in meeting the same UCI (airfield surface) requirement, and General Dynamics actually was rated better than Boeing. The lower pressure plus the large rolling radius give the single tire an obvious advantage in rolling over rough terrain. In addition, it will not sink as deeply into soft ground, thus rolling easier and doing less damage to the field. Because it turns more slowly and has a larger radius the larger tire can have a thicker tread. This, coupled with the lower operating pressure, makes the large single tire less susceptible to cuts and increases its life. Our analysis indicates that it would only be necessary to change a tire on a single-wheel type landing gear about one-fourth as often as with the dual-wheel landing gear. The logistic and maintenance advantages are obvious, particularly when it is realized that separate records are kept on each wheel, each tire and each brake, and frequent recycling through depot overhaul and inspection is required.

"The Navy has expressed a preference for the single-wheel main landing gear.

#### BOMBING ACCURACY WITH OPTICAL SIGHT

"There was testimony favoring Boeing's air-to-ground fire control system because it purported to provide increased bombing accuracy. Actually this comment dealt with only a very small part of the total system—the optical sight for visual bombing. To do this requires the display of additional information on the optical glass ahead of the pilot through which he sights the target. This allows him to read such information as the slant range to the target without looking down at the instrument panel.

"This is a desirable feature from an operational standpoint. The optical sight proposed by General Dynamics is an off-the-shelf sight currently in use and was specifically suggested by the work statement. Its choice was consistent with the work statement general requirement for minimum new developments in subsystems. It can be modified to provide the additional information desired. A study is under way to allow the Air Force to determine if the added complexity is justified for visual bombing. However, it should be borne in mind that (deletion) is the complex and expensive requirement for the fire power control system. This would not be affected by changes in the optical sight information display.

(Continued on next page)



(Continued from page 2)

**WEIGHT**

"It has been emphasized in the testimony that the General Dynamics design is heavier than Boeing. Let's clarify the record. It was evaluated as being heavier for the Navy airplanes, but it was evaluated as being lighter for the Air Force airplanes. However, there was testimony that the weight of the Boeing-Navy airplane would have to be revised upward to raise the speed to a figure comparable to General Dynamics. Also, for Boeing to provide wing fuel tanks like General Dynamics would require an increase in the Navy weight.

**GROWTH CAPABILITY**

"The opinion has been expressed that the Boeing design has the greatest growth capability. By growth we assume this means growth in operational capability. The Boeing design is already bigger physically than the General Dynamics design.

"Growth in the basic TAC mission will come easier to the General Dynamics airplane because of its better supersonic design. A proposal for range growth on this mission was presented with the proposal. This consists of a (deletion) which was recommended for study and development. Growth to higher supersonic speeds at low altitude is also enhanced by General Dynamics' better supersonic design and stronger structure. Growth in ferry range and load-carrying capacity for the Air Force airplane is ensured by the option of using the Navy wing tips and the Navy landing gear as described earlier. Growth in loiter capability for the Navy is assured by the excess fuel tank capacity which is available for use at any time because General Dynamics provided an identical fuel-tight wing structure for both the Air Force and Navy as a feature of its commonality approach.

"We have talked about the airplane, now let's consider other aspects of the program.

**COST**

"Ultimate program cost, not estimates, is the prime consideration. So let's look behind the numbers stated in the cost estimates.

"There are many features of the General Dynamics-Grumman TFX program which support our conviction that our program will cost less than the program proposed by Boeing.

"Some of the most positive cost saving features are as follows:

- "Fewer total number of parts
- "Fewer uncommon parts
- "Less expensive materials
- "Simpler engine installation
- "Conventional speed brakes
- "Less structural testing
- "Fewer drawings
- "Fewer instructions
- "Fewer 'similar parts' which look alike, but aren't
- "Extensive and current manned supersonic aircraft experience
- "Extensive and current carrier based experience
- "Specific variable sweep wing experience
- "Better rating in the Fourth Evaluation in the area of 'Production, Management and Cost.'

"In all discussions with the military, cost realism was emphasized. A firm commitment was required covering the RDT&E portion which represents only about 10 per cent in dollars of the total planned program. Realistic and accurate estimates were requested for the production phase and it was evident that this was for Air Force planning purposes to avoid surprise in future budget estimates.

"General Dynamics adhered strictly to these ground rules in preparing its proposal. We did not price the RDT&E program at a loss. It stands on its own in that it does not plan to carry over into production any cost items that properly belong in RDT&E. To be sure, it is a close price but if the program is performed as planned, we will make a reasonable profit.

**MATERIALS**

"GD's decision to use steel and aluminum as a primary material of construction rather than titanium was based on weight, cost, fatigue characteristics, maintenance and other considerations. GD has used titanium in many applications over the years; it was considered seriously for several places on the TFX. Titanium is, however, at least several times as expensive as steel and aluminum. Its properties are not as well known in the thicker gages which would be required to utilize it extensively in the heavier parts of the structure such as the wing carry through and wing box. Specifically, the data available on fatigue properties show more scatter than for steel, i.e., there is more difference in quality between the worst piece and the best piece. To design conservatively for long life, it is necessary to add enough material to account for the poorest quality piece you might expect. This would cancel part of the weight saving otherwise possible. Also, it was found that the size of titanium plate available was smaller than aluminum so that an additional splice would be required in the wing structure. This ate up a little more of the potential weight advantage. The increased cost for the titanium applications we studied was about \$115,000 per airplane. With these factors in mind, it seems to General Dynamics that steel and aluminum offers the better alternative for most applications on the TFX.

**EXPERIENCE**

"General Dynamics has more experience than any other contractor in the design and manufacture of supersonic aircraft. The F-102, F-106 and B-58 programs have given GD over 50,000 hours of supersonic flying. Boeing has yet to build its first supersonic manned aircraft. Grumman has had carrier based supersonic fighter experience with its F11F. Grumman airplanes have made more than 1/2 the carrier landings and takeoffs in the history of the U.S. Navy. Grumman has built and flown a variable sweep jet fighter, the XF10F. The General Dynamics-Grumman team had under its belt 4,330 hours of wind tunnel testing and full scale design and construction experience on the XF10F and 4,758 hours of wind tunnel testing on the TFX when the proposal was submitted.

"In over a year of flight testing of the XF10F, its wings were swept and unswept in the air on substantially every flight without difficulty. This conclusively demonstrated the feasibility of the variable sweep concept. This obviates the need for a special prototype program to duplicate this experience before proceeding with the TFX program.

The F-102, F-106, F-11F, XF10F, and B-58 are as close as you can get to the TFX in terms of experience. As guided missile and subsonic SAC heavy bomber are a long way from it. The General Dynamics-Grumman experience in these pertinent programs will save the government and the contractors time and money in learning.

"If experience is worth anything, the GD-Grumman team is clearly ahead for the job to be done.

**BI-SERVICE REQUIREMENT—COMMONALITY**

"General Dynamics better met the clear requirement for a bi-service aircraft. From the outset, the emphasis was on development of a weapon system that provided minimum divergence between the Air Force and Navy versions. The recurring theme throughout the procurement actions was that changes to the Air Force tactical version of the basic aircraft to achieve the Navy mission were to be held to a minimum. It was explicitly set out as a vital condition in the Defense Department's letter of July 13, 1962, to both companies prior to the submission of the last proposals.

"GD took its customer seriously in this regard and was responsive. GD's commonality approach achieved one aircraft with

the minimum divergence requested. The fuselage, wing, and tail of both versions of the General Dynamics TFX are structurally the same. The Navy wing tips are simply bolted on. The Fourth Evaluation Report found that General Dynamics proposed an airframe design that has a very high degree of identical structure for the Navy and that in the two Boeing versions less than half of the structural components of the fuselage, wing, and tail were the same. The Evaluation Group concluded that Boeing, in effect, proposed two different airplanes structurally.

"General Dynamics' greater commonality was not the result of a sacrifice of performance in pursuit of a commonality goal as such. Rather it came as a bonus from a better idea on how to satisfy and reconcile the differing performance and structural strength requirements of the two services. Dr. Brown quoted a Navy evaluation briefing as describing our bolt on wing tips as 'an elegant and preferred solution.' Gentlemen, there have not been significant performance sacrifices for the sake of commonality or economy. On the contrary, the bolt on tips, the interchangeable landing gear, the common wing fuel tank and the strength for the same top speed for the Navy and Air Force have been shown to provide performance bonuses when advantage is taken of them. We can be certain that our TAC and Navy operators will think of many more uses than we have suggested. You are, in fact, buying a better and more versatile airplane because General Dynamics came up with a better idea.

"There are several tests of the accuracy of a commonality figure. Are they about the same by weight as by parts count? Under a different definition of parts, are they about the same? We have applied these tests and the results are as follows:

"by AMPR weight	91.9%
"by structural assembly count	90.0%
"by weight empty	89.7%
"by structural parts count	88.5%
"by AMPR parts count	85.2%
"by structure and equipment (without avionics)	83.6%
"by complete airplane including avionics	83.2%
"by fabrication tools required	85.0%

"We have observed that several of the witnesses have attempted to disregard commonality as a cost saving feature with a simple reference to Boeing's lower quote. Also some confusing testimony has been given about similar parts being as cheap as identical parts because the same assembly fixtures may accommodate parts having certain types of differences. But assembly tooling is only part of the story. Each part must be fabricated as a separate unit. On the average about 2.5 fabrication tools are required per part.

"The use of techniques such as numerically controlled machines in the manufacture of parts for modern airplanes has been cited and is recognized as offering substantial economies by reducing fabrication tooling cost. For the last five years, General Dynamics has used tape controlled machines in the fabrication of production parts. Many of our suppliers are using these machines and realizing substantial savings.

"The actual forming, milling, guiding, drilling, and finishing of a part is not the major part of the total task required to incorporate it as an item in the delivered product. The major cost is generated by the need for designing, drawing, releasing, getting material, testing, transporting, listing, stocking, analyzing, segregating, inspecting, identifying, and installing each part as a separate item by part number.

"No matter how small the difference is between two non-identical parts, each of the actions I have mentioned must be accomplished distinctly for each part

number. Of the total parts in the airplane less than 5% will be made on a numerically controlled mill.

"It is well known in industry that the design, development, test, production and support costs for a number of identical weapon systems are less than such costs would be for a mixture of two different weapon systems. The higher the degree of identity the more the savings.

"The logistic support people are aware of the savings obtained by reducing the number of different stock numbers required to be carried in the system, and the dangers present in having similar parts which look alike but have different strengths or other characteristics which might inadvertently get installed on an airplane with catastrophic results. This is a serious problem in peacetime with elaborate controls. In wartime it can become a monumental problem.

**ADDITIONAL ADVANTAGES**

"Testimony has been submitted which shows that in the Fourth Evaluation Report General Dynamics' superiority in the following significant areas were listed.

- "1) Better structural design
- "2) A higher rating in the 'Production, Management and Cost' area
- "3) A better 'scheduling' program
- "4) An edge in supersonic maneuverability at altitude
- "5) Better proposed programs in the Personnel Subsystem and Aerospace Ground Equipment
- "6) A slight edge in the flight control area
- "7) A low radar cross section and an integrated penetration aids system

**COMPETITION**

"General Dynamics believes in competition. To be equitable, any competition must take place under ground rules which are known and understood by the competitors and by the judges. In the case of the TFX, these ground rules consisted of the Work Statement and associated instructions plus the directives from the Department of Defense.

"There are over 1,600 requirements of one kind or another set forth in the Work Statement, not including those applicable by reference to other specifications which number in the thousands. A great deal of the 275,000 man-hours spent by the evaluation group was directed toward measuring the degree to which the competitors met the requirements of the Work Statement. Their scoring is perhaps the most valid measure of each competitor's performance against the rules of the competition established by the Work Statement. You will recall that both the raw score and the weighted score favored General Dynamics. This is a basic fact that cannot be disregarded.

"The degree to which the second set of ground rules, i.e., the Department of Defense Directives, were met was properly judged by the Department of Defense itself, and in this framework of rules, General Dynamics again won the competition.

"In short, a careful review of the testimony and the facts will support the conclusion that General Dynamics properly won the competition.

**CONCLUSION**

"The TFX is extremely important to national defense. It is more than just another airplane. Once we decided to compete for it, we went all out. We designed the plane to the highest standards of excellence to meet the fundamental objectives. We have been hard at work developing it for our customers ever since notification that we had won the competition. Everything I have learned since then, including the information produced at these Hearings, convinces me that our margin of superiority is substantial. I believe we have a solid basis to confirm to you that the General Dynamics' TFX is a very superior weapon system and that the program presently planned will be achieved at the lowest possible cost to the taxpayer."









**REHEARSING**—In top photo, Beverly Blumling, appearing in Astro Players' current production, "Seven Keys to Baldpate," gets advice from Director Ron Shapiro, while below Dick Keating, Frank Tierney and Al Varon pounce on Bob Ross in mad-cap scene.

## Laughs, Thrills Mark Mystery

What happens to a blood-and-thunder novelist when he finds himself embroiled in a situation similar to one of his own plots?

GD/Astro employees attending last week's opening performances of "Seven Keys to Baldpate," ARA Astro Players' current production, learned the answer, and still others will see the show May 17, 18, 24 and 25.

The comedy-mystery classic by George M. Cohan is presented in ARA Clubhouse auditorium. Curtain time is 8:30 p.m.

Donation is \$1 for adults and 50 cents for juniors, with Fridays (May 17, 24) designated "Family Nights" on which school-age children will be admitted free when accompanied by parents.

The play is directed by Ron Shapiro, and the cast includes Art Templin, Evelyn Johnston, Ted Cottrell, Suzy McEntee, Beverly Blumling, Millie Rankin, Dick Keating, Annabel Audet, Frank Tierney, Al Varon, Harvey Sampson, Bob Ross and Charles Audet.

Set design, construction and decor were handled by Julius and Thelma Rose, with lighting by Hal Thompson and John Streiff.

## \$25 Package Jaunt To Vegas Offered

Another of its popular bus trips to Las Vegas for employees will be sponsored by ARA June 14-16, with reservations now being accepted at employee services outlets.

A package price of \$25 per person includes round-trip transportation by chartered bus and two nights' lodging at the glamorous Stardust Hotel.

The trip will originate from in front of GD/Astro's Bldg. 2 reception center at about 5:15 p.m., June 14. Buses will return to this point at about 8 p.m., June 16.

Reservations are being accepted on a first-come, first-served basis.

## Discount Tickets To Fair Offered

Discount tickets to the East San Diego County Fair (May 29-June 2) are now available at employee services office, Bldg. 8, at GD/Astro.

Regular adult tickets, normally selling for 75¢ are 50¢.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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**ARCHAEOLOGY**—Meeting 7:30 p.m. May 22 ARA Clubhouse. University of California film on Mayan civilization; guest speaker.

**BRIDGE**—Meeting May 17, 24 in executive dining room. Regular play nights in ARA Clubhouse resume May 31. New lesson series starting in June. Information, reservations with Art Saastad, ext. 3012.

**CAMERA CLUB**—Astro Lens second quarterly contest, 7:30 p.m., May 19, Photo Arts Bldg., Balboa Park. Photorama, May 26, Balboa Park.

**CHORUS**—Rehearsals each Monday, 7:30 p.m., ARA Clubhouse.

**CINERAMA**—Tickets for June 2 performance "How the West Was Won," available at employee services outlets with 20 per cent discount (\$1.80).

**DANCE**—Spring Frolic, May 18, El Cortez Hotel. Tickets 75 cents each, employee services outlets.

**DRAMA**—"Seven Keys to Baldpate," May 17, 18, 24, 25, ARA Clubhouse auditorium. Donation \$1 for adults, 50 cents for juniors. Fridays are "Family Nights" with children admitted free with parents.

**GARDEN CLUB**—Demonstration of orchid potting and corsage making at home of ARA Commissioner Everett Henderson, 3503 Yosemite St., Pacific Beach, 2 p.m., May 19.

**LAS VEGAS TRIP**—\$25 per person includes round-trip by chartered bus, two nights' lodging at Stardust Hotel, June 14-16. Reservations at employee services outlets.

**PHYSICAL CULTURE**—Re-organizational meeting tomorrow (May 16), 7:30 p.m., ARA Clubhouse.

**REDUCED PRICE TICKETS**—San Diego County Fair, \$1 tickets for 75 cents at employee services outlets.

**SOFTBALL**—Representative team plays home games 8 p.m., each Friday, ARA diamond.

**TEEN CLUB**—No dance May 18. Next event, June 1.

**TENNIS**—ARA Spring Tournament, Morley Field courts, May 25, 26, June 1, 2. Enter through May 24 with Bill McHorney, ext. 2852, or Ben Cendali, ext. 3245.

**TRAILERS**—Hurkey Creek County Park outing May 18, 19. Information from Ray Parga, ext. 3805, or Virg Marshall, ext. 3542.

**WATER SKIING**—Skiing every Saturday, Sunday, 10 a.m.-4 p.m., Crown Point, Mission Bay. Club membership applications available from ARA Headquarters.

## McFarlane to Direct Fair Exhibit Effort

Chuck McFarlane has been named chairman of an ARA Stamp Club committee to coordinate preparation of a club exhibit for Del Mar Fair competition.

He will be assisted by Haydon LaNois, Brad Williams, Abe Hurlich, ARA Commissioner Art King, and Fred Lawson.

Lawson, Dept. 374-2, was recently appointed to the San Diego County Philatelic Council.

Next Stamp Club meeting will feature a trading session, and will be held at 7:30 p.m., May 23 in ARA Clubhouse. At the group's final meeting in April, Dick Smith, Dept. 523-7, received an award for his display of French Colonial stamps.

## County Fair Tickets Offered at Bargain

Tickets for San Diego County Fair at Del Mar, June 28-July 7, are now available to GD/Astro employees at discount prices.

Through June 4, they will be sold at employee services outlets for 75 cents (adults) and 25 cents (children). Regular price is \$1.



**SALTY CHARACTERS**—At left, George Scott strikes "sea-going" pose with two prize corvinas on ARA Fishing Club's April trip to Salton Sea. In photo at right are Jim Lawyer and Larry LaMaire.

## Sports & Recreation

### ARA Spring Tennis Will Begin May 25

ARA Spring Tennis Tournament will be played on Morley Field courts May 25, 26 and June 1 and 2, with entries accepted through May 24 by Bill McHorney, ext. 2852, or ARA Commissioner Ben Cendali, ext. 3245.

Events are open to all GD/Astro employees and members of their families, with men's and women's singles, doubles, and mixed doubles scheduled.

A consolation match is planned for first round losers in the men's singles event.

### Space Organization To Meet at Astro

Members of the Space Parts Working Group (SPWG) will gather at General Dynamics/Astronautics for sessions tomorrow (May 16) and Friday.

Host will be reliability control under Director Phil I. Harr.

The SPWG organization is made up of industry and government men who act as advisers to the Air Force in developing an overall library of "Darnell Type" specifications related to space parts with long life, high reliability and special space environment capabilities.

Lt. Col. James R. Gordon, Space Systems Division, USAF, is chairman. W. G. Bjornson represents GD/Astro.

Dr. V. A. J. Van Lint, General Atomic, will present a paper.

### Halterman Elected To Lead Rockhounds

New officers have been elected by ARA Rockhounds and will be installed at a meeting June 12.

Gerald B. Halterman is new president, with Earl L. Manor, vice president; Barbee Scheibner, secretary; and Earl R. Smith, treasurer. Named to the board of control are Past President Ivan T. Hamblin, Viola Beard, George Boone, Dutch Flora, Margaret Harland, Sarah Smith and Ernie Twiss.

At Rockhounds' May 7 meeting, Twiss announced plans to prepare a club lapidary jewelry exhibit for the Del Mar Fair. Members interested may contact him at Plant 19, ext. 1381.

### RICHARDS WINNER OF \$100 PRIZE

Harry Richards, GD/Astro Dept. 143-3, and member of ARA Golf Club won a \$100 merchandise prize in a putting contest May 1 at Bonita Golf Club.

### Golf Members Tour Bonita

ARA Golf Club members gathered late last month at Bonita for a "points vs. par" tournament.

In the 0-15 handicap bracket, Lee Chastain was top man with 42 points while Bill Wray scored 40, Lin Richardson, 39, and Jack Ross, 38. Rick Reed, Ray Leary and Tom Embree tallied 37, Maynard Quackenbush, Jack Weaver and Jim Long, 37, and Bob Stevens and Ernie Stuchly, 35.

A 40-point score from John Luksie was top in the 16-22 handicap class, with Al Lane scoring a second-place 40, Jim Beckard, N. Ryan, Willie Futch, and Bill Kite scored 38, Bill Garnett, 37, Lee Richards and Lou Marine, 36, and Ez Hunt, 35. Charles Harwell, Gene McEachern, Ralph Long and Gene Hooker scored 34.

Among 23 and over handicappers, Dave Jacob, Henrick Eskeason and Ted Palshut led the field with 41 points; Max Gumm, Gus Anderson, Herman Ochendusko and John Miller scored 40; Howard Gunderman, Gene Washburn and Gene Smith, 38; and Cris Shinkle, Otto Daidone, Fred Johnson and A. E. Ross, 37.

Awards in a blind bogey contest went to Lenny Green, Jim Long, Jim Jones, Cliff Gordon, Burt Emerson, Gene Lipopsky, Chuck Petty, Ted Bingham, Dan Reeker, Pat Patton and Chuck Woodward.

### Tonight 'Dime Night' For Astro Coiners

Tonight (May 15) is "Dime Night" for Astro Coiners, ARA coin club, meeting at 7:30 p.m. in ARA Clubhouse.

Guest speaker Dick Martin will discuss "Mechanized Reporting of Coin Values," while both display and auction themes are "Dimes."

ARA Commissioner V. L. Bacon said a free, uncirculated coin will be given to all attending. Refreshments and door prizes are planned.

### Two GD/Astro Sons Earn Scholarships

Two GD/Astro sons were among nine Clairemont High School seniors recently awarded Navy ROTC scholarships covering all college costs including tuition, board, lodging, books and a monthly cash allowance.

They are Willard Pear, 18, son of Ernest E. Pear, Dept. 324-7, and Franz Jaggar, 18, son of Mrs. Anne Jaggar, Dept. 170-1.

Both will study engineering, with Pear enrolling at Oregon State College, and Jaggar at University of California, Berkeley.

### Anglers to See 'Sea Lamprey'

Reminiscences of a recent group trip to Salton Sea, and showing of the movie "Sea Lamprey" are on the program for ARA Fishing Club's meeting at 7:30 p.m., June 5, in ARA Clubhouse.

Fifty-two members braved blustery weather to make the April 26 trek to Salton Sea. Participants were rewarded by sunny skies, temperatures in the 80s, and plenty of corvina and sargo to feed the crowd at a Saturday night fish fry.

John George received the club award for the largest fish taken by a man, while Ries Skinner's catch was largest for youngsters under 16.

"Shame — or modesty — apparently deterred the ladies. There were no women's entries," remarked T. B. Field, ARA commissioner.

### ARA Card Team Leads Tourney

Three teams representing ARA Bridge Club in San Diego IRC team-of-four play were in first, fourth and fifth places as the tournament moved into its final weeks.

Leading the field of 10 teams by a substantial margin was Astro Aces with Pauline Blough, Bill Chapman, Marvin French, Helen Grijalva, (captain), Paul Lewis and Dave Swingle.

Astro Green Team with members Gene Alford, Ron Geist, Charles Thomas and Bill Hatherley, captain, was in fourth place, while Astro Gold Team of Reg Becker (captain), Bill Castrey, Gene Haupt, Tony Miller (non-playing captain), and Al Wilkins held down fifth spot.

ARA Commissioner Art Saastad said a new team-of-four tourney will be organized for July-September play.

Bridge Club will hold meetings May 17 and 24 in Astro executive dining room, while ARA Clubhouse is utilized by another activity. Clubhouse sessions resume May 31. All start at 7:30 p.m.

### Trailer Club Picks Riverside Outing

Plans for a weekend outing at Hurkey Creek County Park May 18 and 19 were completed at the recent meeting of ARA Trailer Club.

The park is located in Riverside County on Highway 74. Details on the outing and other Trailer Club activities are available from Ray Parga, ARA commissioner, ext. 3805, or Virg Marshall, club president, ext. 3542.

The May meeting featured a narrated slide presentation by Jack Hooper.



## New Concept For Atlas Seen In NASA Study

Atlas, once dubbed the "work-horse of the space age," may well turn out to be just that if a current plan within the National Aeronautics and Space Administration (NASA) materializes.

This concept would have Atlas and an Agena stage powering aloft "supply trains" for a proposed orbiting research laboratory.

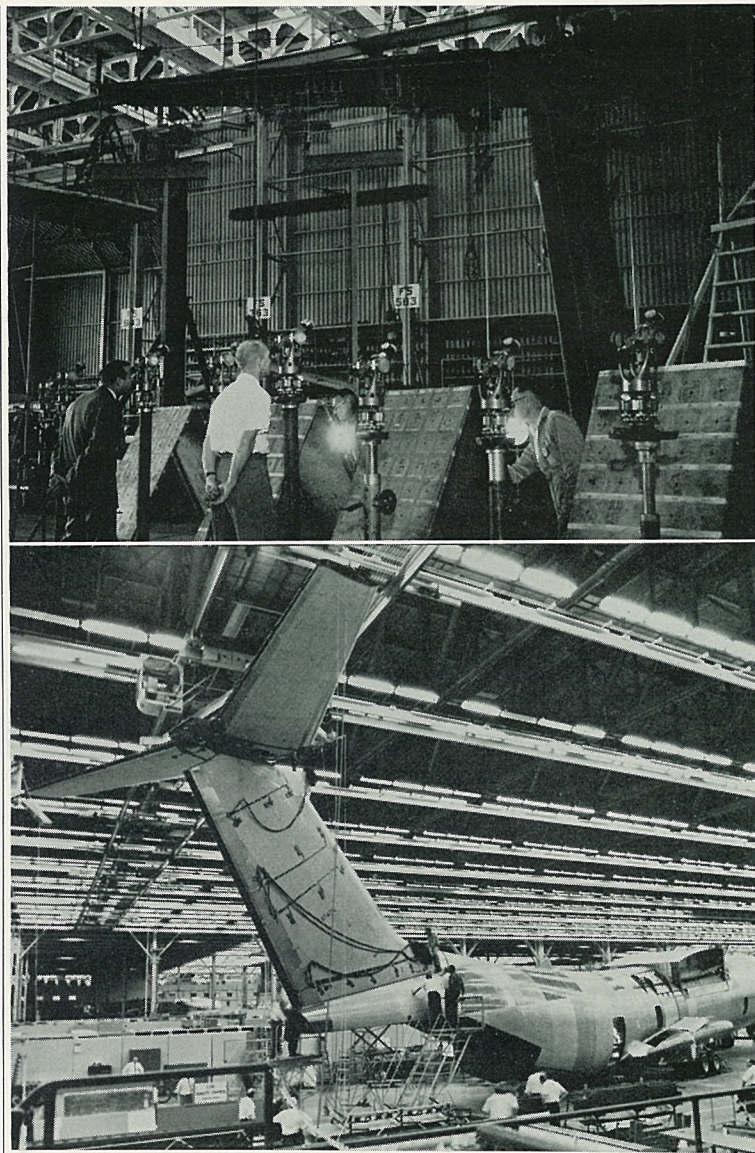
Aerospace industry proposals for studying manned orbital research laboratory systems capable of sustaining a four-man crew in space for one year were to have been submitted to NASA's Langley Research Center yesterday (May 14).

NASA's concept is to have a laboratory launched by a Saturn vehicle into a circular orbit. After a checkout, two crew members using a Gemini spacecraft would be launched to complete a rendezvous and docking maneuver with the laboratory. Later, two more crewmen would join the laboratory by the same method. At intervals of 90 days or less, unmanned resupply spacecraft would be launched by Atlas-Agena combinations and brought by radio control to a rendezvous.

Reasoning is that such a laboratory would provide the means of conducting scientific and engineering research impossible to duplicate on earth. Effects of space environment and weightlessness would be studied.

Two contracts are expected to evolve from requested proposals.

Phase I will provide a comparative study of several alternate ways to obtain the orbital laboratory envisioned. Following evaluation, NASA could follow with Phase II design study.



**TALL TAIL**—In lower shot, first C-141 empennage is mated to fuselage at Lockheed-Georgia Co.'s Marietta factory. Aft fuselage had to be lowered and front tilted to permit high tail section to be placed on top inside building. At top, John Gillette and Don Bowers of GD/Convair structures lab sight through transits at mirrors mounted on C-141 horizontal stabilizer while F. O. Peterson and M. G. Henderson, both Dept. 131, mark points on graph boards during stiffness tests.

## Mirrors Accomplish C-141 Stabilizer Test

Tricks by mirrors measured stiffness of C-141 stabilizers in recent structural testing at the GD/Convair ramp laboratory.

During loading, from 3,000 to 28,000 pounds per side, structures test engineers recorded angular changes due to torsion by sighting through a row of transits at nine mirrors mounted along the edge of vertical and horizontal stabilizers. Mirrors reflect cross-hair images back to scale graph boards to indicate deflection changes.

In this way torsional and bending stiffness can be calculated to confirm design requirements, explained John Gillette and W. D. Bowers, test engineers in charge of the test project.

This was the first time the mirror method had been used in structural testing at GD/Convair structures lab, they said. It was particularly applicable to these specific tests to gather criteria which is vitally important because of the pivotal function of the C-141 horizontal stabilizer.

In other related tests, the pivotal joint was subjected to yaw and roll stiffness testing. Also, the fin was laid horizontally and hung with dial gauges on a steel space frame in another test technique for measuring bending and torque.

Test results will go to Lockheed-Georgia Co., prime contractor on the Air Force jet cargo transport, for evaluation.

### Lockheed Praises Static Empennage

A message to President J. H. Fammé of GD/Convair from Lee Poore, Lockheed-Georgia Co. assistant director — manufacturing operations, lauded C-141 production performance upon mating of the first delivered empennage to the fuselage:

"My congratulations to you and your folks. The static empennage was successfully installed April 22 without any problems. Thanks for a good job!"

### General Dynamics Plants Close May 30

General Dynamics people in all divisions will have a one-day holiday the last of this month as they observe Memorial Day on Thursday (May 30).

Plants will be closed with the exception of necessary maintenance and security personnel. All shifts will report at usual work hours the following day, Friday.

## GD/Astro Transponders Get 'A' For Reliability

Azusa transponders built by General Dynamics/Astronautics have flown aboard nearly 500 missiles of every type launched from Cape Canaveral, establishing an incredible 99.18 per cent reliability record!

This remarkable record reflects highly on those who fabricate the transponders. Too, it spotlights one of the most exacting and thorough reliability control efforts ever formulated.

Electronic manufacturing inspection (Dept. 143-3) personnel are the backbone of the effort, working under J. F. Baebler, chief of inspection (factory), and R. H. Sparks, general supervisor.

The 130 inspectors in this function are about equally divided between men and women, unusual in itself since the majority of Astro's inspectors are men.

Due to the intricate nature of electronic manufacturing, inspectors must perform their assigned tasks simultaneously and concurrently with fabrication. They work side-by-side with assembly workers, performing checks on EVERY step taken in the assembly process.

Their tools include the usual inspection aids, plus an unusual array of optical equipment ranging from microscopes to hand-held magnifying devices. Magnification is a "must" in that some detail work is hardly visible to the naked eye (some wire cannot be seen at all!) and each connection must be double checked.

Ultra violet lamps (black lights) are employed at one point to cause circuit boards to stand out, providing a special final inspection check.

Fabrication involves a variety from platinum wire 1/1000th of an inch in diameter through common-place vacuum tubes, transistors and on into resistors, capacitors, diodes, transformers, etc.

Since each assembly step must be checked, some indication of the job involved is evidenced in the parts various components contain.

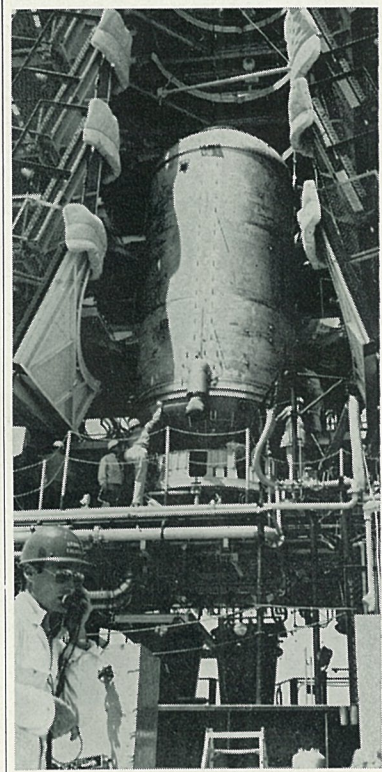
Azusa "C" transponders contain 652 parts; a precision autopilot contains 2,960 parts; a Centaur programmer contains 1,830 parts; and a Centaur guidance computer contains 6,462 parts!

Although Azusa transponders are best known of Astro's electronic products, they take a "back seat" to others in the numbers produced. These include autopilots with gyro, programmer and servo systems; telemetry equipment; the all-important ASIS (Abort Sensing Implementation System) to automatically separate Mercury capsules from Atlas in emergencies; "piggy-back" passenger pods; GLO-TRAC components of many types; and an array of present and future satellite hardware.

Inspectors must be certified for their jobs to meet military and NASA specifications. They go through an exacting 40-hour training program, then repeat training once every six months.

"Our electronic inspectors, like the electronic assemblers they serve, take an unusual pride in their work," Baebler said. "This probably accounts for the small rejection rate."

The section's set policy: "nothing short of perfect is good enough to warrant our inspection stamp."



**SNUG FIT** — GD/Astro crews at Edwards RS gently swing new Centaur battleship propulsion test vehicle tank into place on Stand 1-1. Note mattresses placed as fenders to guard against scratching. Talker in foreground is Paul Witten.

## 'BPTV' Readied For Hot Firing

EDWARDS RS—A BPTV on TS 1-1 here at ERS is being readied "PDQ" by GD/A crews.

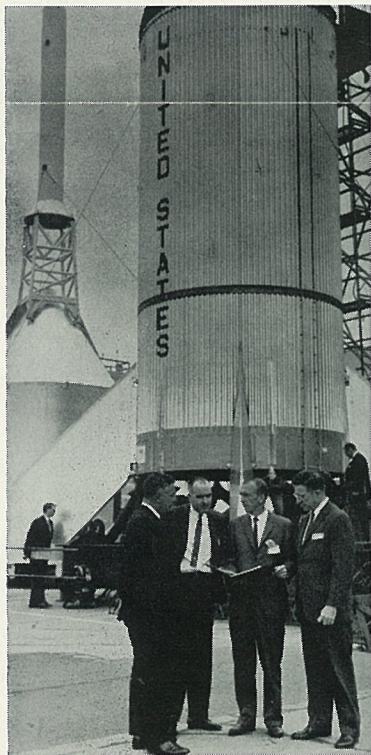
If you missed a point, General Dynamics/Astronautics crews here at Edwards Rocket Site (ERS) are working swiftly (PDQ) in installation buildup of a battleship propulsion test vehicle (BPTV) mounted on Test Stand 1-1 (TS 1-1).

First of its kind, the BPTV represents the efforts of many groups and is destined to serve the Centaur test program.

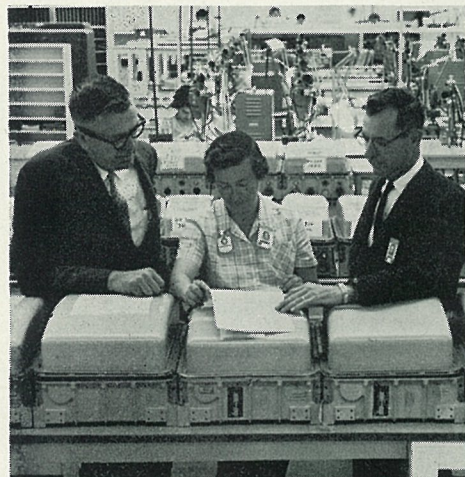
It was designed and fabricated at the main plant. Tooling turned out the basic components. Major assembly handled welding. Inspection ran exacting X-ray checks on all seams. Checkout ran the unit through a series of steps, including the hydrostatic test tower. It was then cleaned and trucked here over a round-about route, due to excessive height.

The BPTV is made of heavier (up to 3/8th inch) stainless steel than that used in flight vehicles. Thus, it may be used repeatedly in "hot firings," impossible in lighter vehicles.

The tank lacks the usual shine of Centaur flight vehicles and is about two feet longer. Otherwise, it contains all components of a regular tank and can be fitted with Centaur's entire propulsion system, plus related "plumbing."



**NASA INSPECTION**—From left, Walter C. Williams, NASA Manned Spacecraft Center, Houston, Texas, deputy director for mission requirements; Robert O. Piland, MSC manager of Apollo Project office; J. B. Hurt, GD/Convair program manager of Little Joe II; and James C. Elms, MSC deputy director for development and programs, look over first launch vehicle during two-day visit of NASA officials at GD/Convair.



**METICULOUS CARE**—By taking extraordinary pains, GD/Astro's electronic manufacturing has established near-perfect record. At left is general view of area and leaning against completed autopilot assemblies are R. H. Sparks, general supervisor, Milly Carson, inspector, J. Fred Baebler, chief of inspection (factory). In next

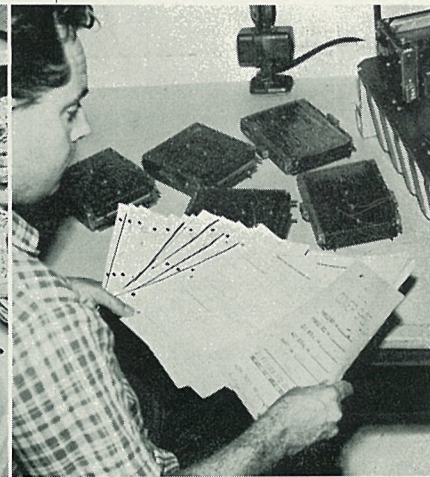


photo Mary May holds module under ultra violet light, typical of efforts to detect flaws. Second from right, Dorothy Smith checks details under magnification. At right, J. L. Cardwell, inspector, disassembled autopilot in background, fans out part of paperwork involved in check.



# 70 Pct. Goal Set For Bond Buying

A four-pronged drive to increase U. S. Savings Bonds purchases by payroll deduction will begin June 17 for General Dynamics/Astronautics, GD/Pomona, GD/Convair and GD/Electronics-San Diego.

It will be keyed with a nationwide campaign among major companies, aimed at boosting the percentage of bond buyers to 70 per cent or more of employment.

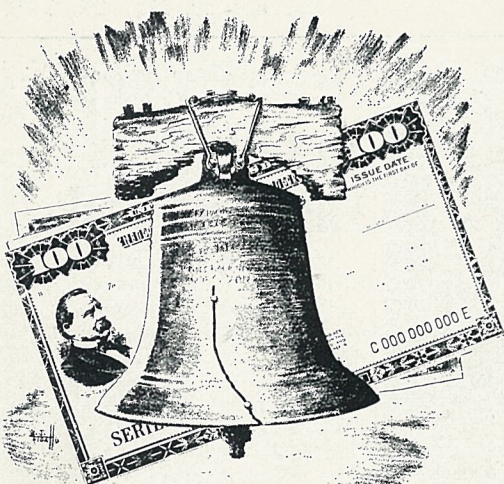
"I know you understand how im-

portant it is that we succeed in raising our percentage of participation . . . and I am sure you know my deep interest in having our Corporation effectively support this effort," Roger Lewis, president of General Dynamics, wrote division presidents. "With your enthusiastic assistance, General Dynamics can reach its goal."

Each division will conduct its own (Continued on Page 2)



ROGER LEWIS



"SYMBOLS OF INDEPENDENCE"

## GENERAL DYNAMICS

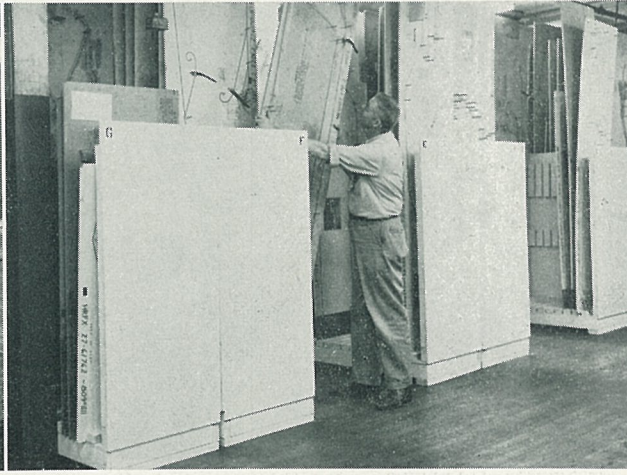
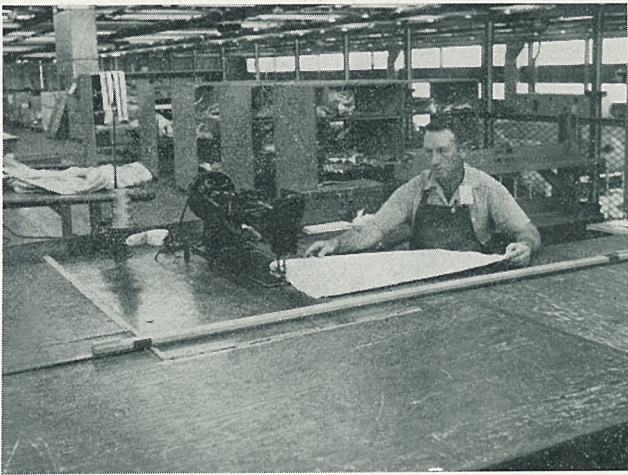
ASTRONAUTICS EDITION

# NEWS

Vol. 16, No. 11

PUBLISHED BY GENERAL DYNAMICS CORPORATION

Wednesday, May 29, 1963



CLEANING UP—Slow but sure, GD/Astronautics is in process of cleaning up AF Plant 19 (formerly called Plant 2) to degree necessary in missile-making. In

center is area before cleaning crews and painters moved in. At left and right are areas that have been refurbished.

## Task Planning, Cost Control Completely 'Computerized'

Now in operation at General Dynamics/Astronautics is a computer system considered the largest single one of its kind ever to be installed at one time.

The system — Task Planning and Cost Control, as it is called in its entirety—is comprised of a number of subsystems.

Directly affecting every GD/Astro department and employee, these are: shop order and operations inspection log (OIL) master file maintenance, performance reporting, accounts payable, travel journals, cost ledgers, project budgets, expense ledgers, work assignment plan (WAP) reporting, labor distribution, material distribution, and overhead distribution.

Coupled with the previously installed payroll computer system (General Dynamics NEWS, Dec. 20, 1961), Task Planning and Cost Control represents one of industry's most completely "com-

puterized" financial reporting systems.

"We consider this a major advance toward more effective cost control," said E. G. Hill, GD/Astro controller.

Heart of the system is an IBM 7074 computer with IBM 1401s as peripheral equipment. Punched cards are the basic input, after which magnetic tape is used exclusively.

The system produces a total of 220 reports — approximately 550 were previously required — from the 184 production computer programs of which it is comprised. (An additional 80 programs were written to convert manual methods and punched cards to the computer's magnetic tape system.)

Now included in the system are all former punched card financial operations (except those too small to be economically com-

(Continued on Page 2)

## Blood Credit Running Low

Unusually heavy demands for blood over the past weeks add a special significance to the bloodmobile visit planned for General Dynamics/Astronautics June 20.

By the time the bloodmobile sets up operations in Bldg. 2, Plant 19, Astro's blood credit will likely be in the "red" for the first time in many months.

Astro employees assigned to Plant 19 (formerly Plant 2) and GD/Convair's Plant 1 will be solicited beginning next week. A goal of 200 pints has been set to insure continuation of the program until the next bloodmobile visit. Shuttle bus service will operate between the two locations June 20.

This visit marks the initial bloodmobile visit to this area.

## Con-Trib Will Help In Pool Project

GD/Astronautics Employees' Con-Trib-Club has announced its support of a county-wide drive to provide a therapeutic and recreational swimming pool for 4,700 patients at Patton Hospital.

In addition to contributing \$7,000 toward the \$20,000 San Diego goal, Con-Trib-Club has contacted 31 of the area's largest philanthropic groups to apprise them of the effort.

## Pins Commemorate 500th Azusa Flight

A limited number of commemorative pins marking the 500th flight of an Azusa transponder on the Mercury-Atlas which boosted Astronaut Gordon Cooper on his multi-orbital flight are now available to GD/Astro employees.

They may be purchased at employee services office, Bldg. 8, during regular sales hours.

Pins are gold finished representations of an Azusa transponder, over-printed with numerals "500." Cost is 95 cents each.

## Plant 19 Spruced In Clean-up Job

One of the biggest "face liftings" ever performed by General Dynamics/Astronautics plant engineering department continues on schedule this month with results on many fronts.

Primarily involved are Bldgs. 1, 2, 7 and 8 at Plant 19 (formerly Plant 2) where interiors are undergoing extensive reconditioning and exteriors are being "policed" as needed.

Work began early this year and a force of about 70 are currently engaged in the project. Although the number of personnel assigned will decrease, phases of the program will extend into early 1964.

W. J. Stanley, manager of plant engineering, describes the program as a transition of facili-

ties "from aircraft to missile production."

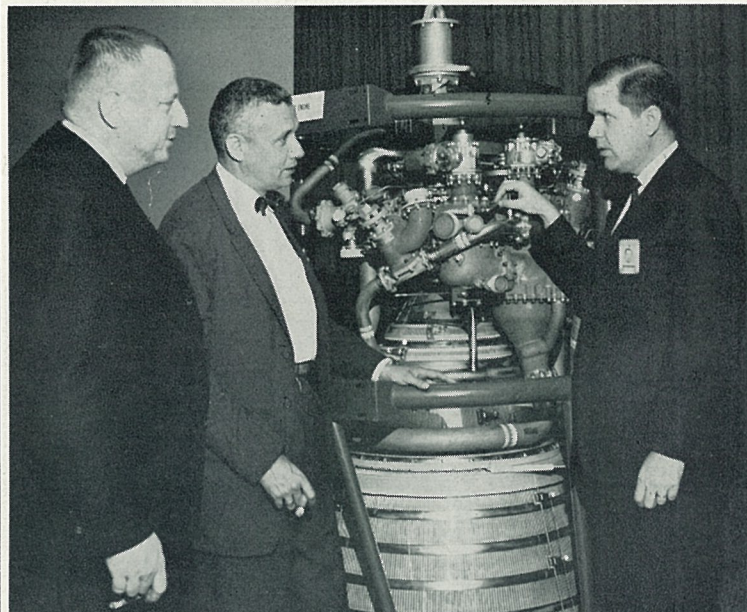
"Our contracts call for production under controlled cleanliness," Stanley said. "We are preparing to meet these environmental conditions throughout all GD/Astro plants to assure uniformity of working standards."

Extensive planning has been required to determine what should be retained and what declared surplus among the many pieces of equipment, work benches, storage areas, etc. General Dynamics reclamation centers bulged with surplus for several weeks. Most of the material has been sold at this time.

Items retained are being repaired and repainted at the same (Continued on Page 2)

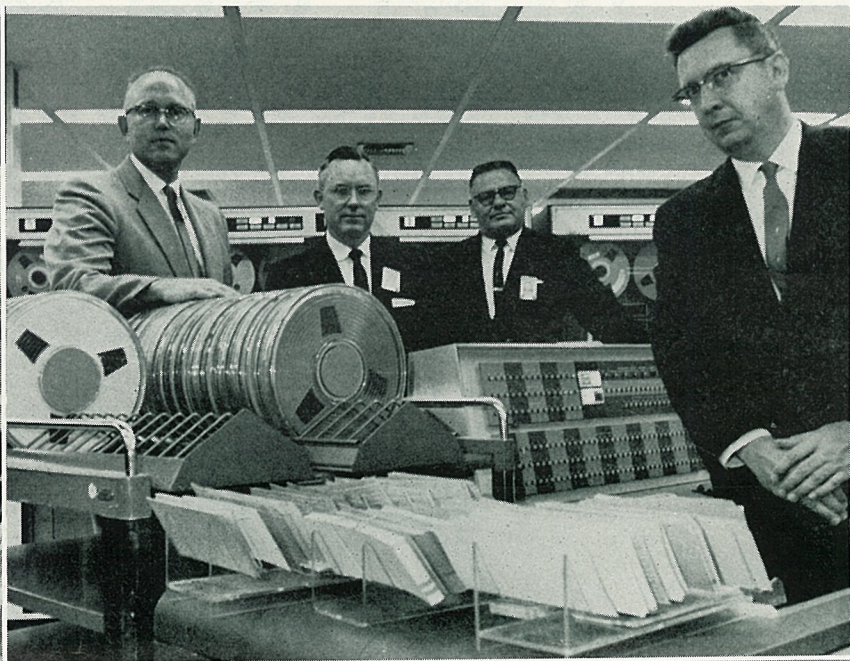


CONTRIBUTORS — Representing departments involved in GD/Astro's new computerized Task Planning and Cost Control system are Al Beutel (data processing), Bruce Piper (data systems), and Ray Tucker (industrial accounting).



FAMILIARIZATION — Grant L. Hansen, right, Centaur program director, discusses Centaur rocket engine with Joe McGolrick, left, assistant Centaur project manager, and Dr. Richard B. Morrison, program director, launch vehicles and propulsion, of NASA headquarters. Occasion was three-day familiarization course on Centaur at GD/Astro, attended by 50 government and industry space scientists.





MODERN MARVELS—GD/Astronautics' data processing capability is enormous. Key men are in photo at top right, in front of IBM 7090. From left: T. R. Dines, chief of computer technology, H. W. Buckner, chief of scientific programing, L. B. Albright, chief of planning and control, C. E. Diesen, manager of data processing. In photo at lower right, R. G. Foster, chief of business

programing, right, and C. E. Garner, chief of data processing operations, go over problem with Programmer Glenn Holland, center. At top left, Librarian Billie Slovacek "files" reel of tape in vault. In photo at lower left, card punch operators prepare data for taping. GD/Astro computer battery includes two IBM 7090s, one of which will be converted to 7074 version.

## Flexibility Key To GD/Astro's Vast Data Task

Pay checks to physics, time cards to thermodynamics, spare parts to spacecraft, name it and an unusual General Dynamics/Astronautics department—data processing—can pinpoint a role it plays in the effort.

Each project, program, operation and employee has a stake in work performed by the 563 men and women in Dept. 101. (Skeptics are reminded where their paychecks are turned out.)

Unlike the majority of space industry firms, GD/Astro combines both business and scientific data processing under a single management. Detailed programing makes equipment equally effective in seeking answers to complex engineering and scientific problems as in performing day-to-day business operations.

Carl E. Diesen is manager of data processing, reporting to J. H. Johnson, director of management systems.

"Flexibility is the cornerstone of our operations," Diesen said. "We are geared to help the engineer, as needed, without a break in our business processing routine."

(GD/Astro also operates, under engineering, a complex and completely equipped analog computer system.)

Tools of data processing are high-speed electronic computers, plus a baffling array of supporting equipment. They constitute a means of assembling staggering amounts of information at fantastic speeds with ample means for storing usable data for future reference.

Raw data, through programing, is transposed to punch cards, each containing 80 columns of information. Cards fed into machines are converted to magnetic tape, each reel holding 2,400 feet. Electronic computers read from the tape, spewing forth answers and reports through printers onto continuous forms. Printers can process 800 cards per minute and print 600 lines in the same time. Or they can work in reverse, turning out 250 cards.

In the initial quarter of this year, data processing used more than 35-million punch cards; over seven million continuous forms; and in April processed 604,625 documents related to business operations alone.

Some indication of the speed involved is evidenced in the IBM 7090 (GD/Astro has two) computer system. This large-scale transistorized system can perform 250,000 operations per second and can store in its memory 32,768 10-digit numbers. In two-millionths of a second it can remove or replace a number in the memory system.

An experienced accountant with a desk calculator would require 900 years to perform what the 7090 does in just one hour!

GD/Astro is presently converting its 7090 system to an IBM 7094, an even faster and more complex system.

Magnetic tapes are the main means of storing data and Astro (Continued on Page 4)

## 70 Pct. Goal Set For Bond Buying

(Continued from Page 1) campaign with payroll deduction authorization cards distributed through supervision to all employees not now participating. Additional cards will be issued to current bond buyers with the hope that individuals will authorize larger bond deductions.

Currently, GD/Convair leads in percentage of participation, with 56 per cent of employment buying bonds regularly at the rate of an average \$7.88 deduction per week. GD/Astronautics has 45 per cent participation and a average weekly deduction of \$7.21. At GD/Pomona the participation is 40 per cent with a \$7.18 average weekly deduction, while GD/E-San Diego's participation is 35 per cent and weekly saving average is \$8.62.

## Log Book Entries



J. W. Blaumeyer, GD/Astro Dept. 210-0, received his 25-year pin recently from J. R. Dempsey, Astro president.

## Service Emblems

MAIN PLANT  
Service emblems due during the period May 16 through May 31.  
Twenty-five-year: Dept. 684-4, R. S. Hathaway.

Twenty-year: Dept. 130-5, J. T. Schultz; Dept. 141-2, James Makis; Dept. 143-1, R. A. Mendoza; Dept. 335-3, Marshall Aker; Dept. 376-4, L. L. Dress; Dept. 454-0, R. E. Neusche; Dept. 715-0, L. D. Gillmore; Dept. 756-0, C. J. Wilson.

Fifteen-year: Dept. 140-3, A. G. Scherer Jr.; Dept. 151-0, C. E. Kinney; Dept. 290-4, R. L. Kercher; Dept. 362-2, O. H. Gideon; Dept. 521-6, Margaret L. Rosenberger; Dept. 576-4, A. J. Nickell; Dept. 756-0, M. J. Shelton; Clarence Walker; Dept. 759-0, J. F. Weddle; Dept. 965-4, H. L. Jensen Jr.

Ten-year: Dept. 011-6, W. C. Ruzich; Dept. 250, Herbert Burch, C. B. Johnson; Dept. 322-2, J. A. Flores; Dept. 373-1, C. W. Summers; Dept. 380-2, J. D. White; Dept. 382-3, A. L. Hayes; Dept. 404-1, H. M. Newbery; Dept. 452-0, K. W. Noonan; Dept. 454-0, W. B. Larson.

Dept. 563-1, Mary A. McGowan; Dept. 568-4, O. C. Roberts Jr.; Dept. 573-3, R. C. Butler; Dept. 598-5, W. M. Tsunoda; Dept. 715-0, A. R. Mathewson; Dept. 959-5, G. R. Eldridge; Dept. 960-3, R. S. Ishisake; Dept. 972-0, G. D. Cochrane; Dept. 975-5, H. R. Clark.

## Births

### MAIN PLANT

FARR—Daughter, Erika Lyn, 6 lbs., 10 oz., born May 9 to Donald E. (Dept. 958-7) and Sally (Dept. 322-1) Farr.

HARRIS—Son, Craig Steven, 7 lbs., 8 oz., born May 3 to Mr. and Mrs. Alan Harris, Dept. 035-3.

## Deaths

### MAIN PLANT

WEGMANN—John Jr., Dept. 547-7. Died May 8. Survived by two children.

## Personals

### MAIN PLANT

We wish to thank our many GD/Astro friends for their thoughtfulness and kind expressions of sympathy in the recent loss of our loved one.

The family of Manuel Cordova

## Retirements

### MAIN PLANT

JARVIS—Stanley G., Dept. 250-1. Seniority date Jan. 22, 1951. Retired May 1, 1963.

PEARSON—C. L., Dept. 324-7. Seniority date, July 18, 1952. Retired May 1.

WRIGHT—Edwin M., Dept. 759. Seniority date Sept. 16, 1947. Retired May 24.

## General Dynamics NEWS

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**CHEERS**—GD/Astronautics led cheering during highly successful Cooper orbits, but other General Dynamics divisions supplied echoes. At top left, B. G. MacNabb, GD/Astro operations director at AMR, shakes hands with astronaut as he enters elevator just prior to flight, while J. R. Dempsey, GD/Astro president, is in back-

ground. In center Nancy Brown, Burt Brockett and Maurice Wood of communication dept. turn out first plant notice. At right, at tracking station atop Astro's Bldg. 4, Dave Fyffe and Mary Peddy pick up capsule on first pass over San Diego. Astro's Atlas 130-D launched Cooper into orbit.

## Cheers For Cooper's Epochal Flight Include Kudos For GD/Astro's Part

While the nation and the world feted Astronaut Gordon Cooper, General Dynamics Corporation folk who played vital roles in his success quietly accepted congratulations from many points.

Details of Cooper's orbital flight aboard Mercury MA-9 spacecraft "Faith 7" are legendary. So is the perfect launch of Atlas 130-D which made it possible.

The launch phase was dubbed a "textbook flight" and "picture shot" executed with the "precision of a turkey shoot." Each description was a direct tribute to the thousands of men and women within General Dynamics who contributed that "extra

something" that has made the manned Mercury flight program a perfect success.

Gen. Bernard Schriever, commander, Air Force Systems Command, summed up official feelings in a letter to GD/Astro President J. R. Dempsey lauding Astro employees.

"Results reflect a brilliant culmination to many months of preparation and each man and woman has every right to be proud of a job extremely well done. I would appreciate your conveying my deepest appreciation to all of those concerned with the flawless performance of the booster system and completely successful launch oper-

ation," wrote Gen. Schriever.

Major Gen. Ben I. Funk, commander, Space Systems Division, AFSC, bestowed special commendations on T. J. O'Malley, Astro launch operations manager, and C. D. Fowler, site manager, and those who work with them.

General Funk said:

"I am well aware of the vital role which Atlas has played in the Mercury Program and a great deal of credit for the success of the program is due to the untiring efforts you and the members of your staff have put forth in assuring the reliability of the booster and the safety of the astronaut . . ."

## Azusa Continues Fantastic Record For Reliability on Cooper Flight

The May 15 launch of Mercury Astronaut Gordon Cooper marked the 500th time Azusa—General Dynamics/Astronautics' fantastically reliable tracking system—performed its vital tasks for the nation's space effort.

Range safety, missile system evaluation and orbit determination: these are the assignments to which Azusa has contributed during nearly every launch over Atlantic Missile Range.

Its reliability: 99.2%.

In the 17 years since its development began in conjunction with the MX-774 program (from which Atlas also evolved), Azusa has been a growing tribute to ingenuity, engineering innovation and skill, advancing technology—and perhaps most of all, to people.

J. W. Crooks and R. C. Weaver were part of the MX-774 guidance study undertaken by GD/Astro's parent Convair division in 1946, and are credited as co-inventors of Azusa.

As early as 1947, an experimental system had been built which successfully tracked an air-

craft to 139 miles with an error of 800 feet during tests in San Diego.

By 1949, the Air Force had expressed interest in the expanding system, and a contract for a complete tracker was awarded. The following year, another Azusa veteran, Al Roth, joined the program.

Also involved from those early days were D. C. Prim, J. R. Blackwood, L. N. Lawhead, D. H. Roll, J. C. VanCaster, D. M. Hill, T. B. Field, M. M. Cox. All were on hand to see the system—Azusa Mark I—completed in 1953, and installation begin at Cape Canaveral.

Convair and Atlantic Missile Range conducted field tests on the system through 1956, tracking aircraft and ballistic missiles as early as 1954.

Joining in the growing program during those years were J. J. Maxwell, and R. J. Jacobs, W. R. Benton, Albert Wittenberg, R. A. Harwood, A. R. Horsely, A. C. Greeley, L. G. Chase, T. H. Scholder.

On Oct. 2, 1956, data on the

experimental system revealed fantastic promise: Azusa Mark I, if equipped with appropriate missile transponder and antenna, could track up to 3,000 miles!

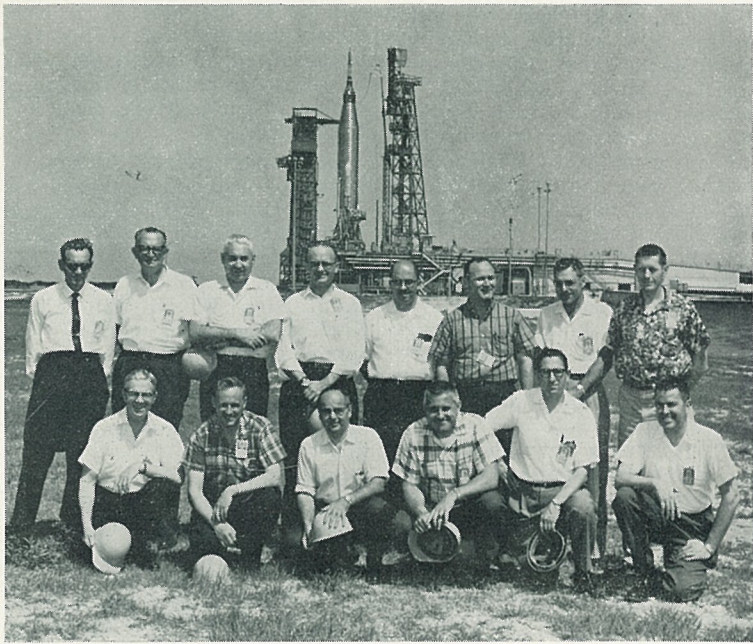
That same year, GD/Astro received a definite contract for a permanent, operational system—Azusa Mark II—to be installed at the Cape.

H. L. Copeland was on hand to hear the news, as were H. K. Shirley, J. A. Moody, Art Saastad, Wilma Early, D. F. Nichols, A. R. Evans, E. C. Frankoski, M. E. Sheski, H. A. Vasques, H. B. Jenkins, Eugene Swindell, J. B. Porter and B. G. Anderson.

About that time an IBM 704 computer was added to the system for the first real-time impact prediction, and during 1957 special filters and operational controls were incorporated to improve tracking under adverse flame attenuation effects.

Joining the Azusa team now were T. R. Woods, Valerie Knettle, J. H. Getz, George Goddard, W. P. Uerkvitz, F. W. Shaw, G. W. Moses, S. R. Zanin, L. G. Karel, R. E. Fixen, R. A. Grygar.

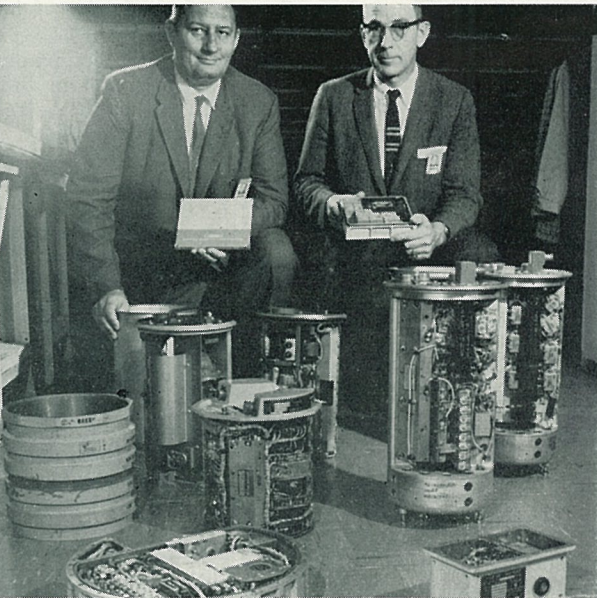
(Continued on Page 4)



**CAPE TIGERS**—With Atlas that took Gordon Cooper aloft gleaming in background, members of "Tiger Team" at Cape Canaveral pose for historic picture. At left, kneeling, is C. F. McCabe, team captain.



**TIGERS**—Not all members of GD/Astro Mercury "Tiger Team" (special group that followed Cooper's Atlas from beginning) were at Cape Canaveral for shoot. Here are five whose job was done when missile left home plant. But they shared elation of other Tiger teammates, as well as that of all GD/Astro folk who contributed. From left, C. D. Fikes, K. G. Kover, R. S. Pappa, T. N. Bennett, J. Cooney.



**LOOKING BOTH WAYS**—In center is Florida "memoir," photo of team at Cape Canaveral, many of them veterans of program, who installed Azusa Mark II. Radomes are in background. At right are Jim Crooks and Bob Weaver, co-inventors

of Azusa system, with Weaver holding latest model of transponder. In foreground are others which figured in system's evolution. In photo at left, R. J. Jacobs, Sam Combs, M. M. Cox, Azusa program, discuss bright future of tracking systems.





REPEAT—Members of ARA pistol team show form they used in scoring 1,168 points to best CRA team by 29 points in annual Astro-Convairst pistol matches. Team members, from left, are Gordon McPherson, Al Schindler, Ralph Sanderlin and Roland Schneider.

## Azusa Continues High Record For Reliability on Cooper Flight

(Continued from Page 3)

Azusa Mark I was first tested with a new ranging system improvement which afforded even greater impact prediction accuracy on Jan. 28, 1958. By Aug. 2, the system was tracking continuously to 780 nautical miles.

That year the Azusa program added such names as V. A. Joslin, E. O. Campbell, W. F. Bradley, S. A. Combs, O. D. Greenwood, M. R. Huff, A. E. Hunt.

During these months a new Azusa was taking shape—parts and components, design and drawings in San Diego, and at Cape Canaveral, a new "super-tracker," Mark II.

C. H. Burns entered the program only two months late to observe the first missile tracking operation with Mark II on July 28, 1960, but Paul Yasuhara, J. H. Cooke, Herman Sorem, C. K. Stroborg, B. A. Beach, C. A. Heldwein and Reinhold Braun were on hand.

So were Project Engineer George Eaton, D. L. Anderson, H. W. Donovan, K. A. Kolozsvary, V. J. Poehls, E. J. Matson, Marshall Agrava, G. T. Herring, Manuel Martinez, C. C. Lewis and A. C. Barnett.

Now groundwork was being laid for something new in the Azusa program.

The Mark II was installed and operating at Cape Canaveral, but the Air Force recognized a need for a backup system down the Atlantic Missile Range which could assure continuous flight path, trajectory and position measurement.

Thus Mark I got a ticket to Grand Bahama Island, British West Indies.

The veteran system, Air Force officials calculated, could be

moved and updated for about one-fourth the cost of a completely new tracker. (This saving received an added lift when GD/Astro actually did the job at nearly 10 per cent less than contract price.)

(In support of the Azusa systems, GD/Astro also maintains a Service Center at Cape Canaveral with C. C. Lewis, H. W. Byrne, J. E. Dula, J. N. Livingston, F. D. Martin, J. P. Hill, W. E. Duke, R. J. Nies, W. H. Willingham, G. J. Massaros permanently assigned. Shirley, R. A. Smalley, C. E. Myhrvold, R. E. Wilson, J. A. Grinarnl at San Diego are "shock troops" for this operation.)

The shift began in October, 1961 (S. E. Lou, J. J. Heilman, and the late C. W. Kushera were on board by then), and by the time it was completed only a few months later (May, 1962), C. R. Benzel, J. P. Kelly and J. N. Obbard had joined the effort.

Other names behind the Azusa success story are legion. Engineers, draftsmen, technicians, clerks, assemblers, men and women at GD/Astro's San Diego plant and at Cape Canaveral; Pan American, RCA, Air Force, Navy, NASA—all made important contributions.

Their system has tracked its way to fame with Atlas, Thor, Polaris, Titan, Jupiter, Redstone, and as unseen companion to such men as Glenn, Carpenter, Shirra, Grissom, Shepard and Gordon Cooper.

## Flexibility Key To Data Task

(Continued from Page 2)

has almost 10,000 reels in storage for use as needed. For instance, there are master tapes for preparing payrolls. On these tapes, data relative to an individual employee takes up three-fourths of an inch and is represented by 467 characters. However, these data cover everything from name, clock number, etc., through weekly deductions, labor codes, etc. In short, everything there is to know about the employee except the color of his hair.

GD/Astro leases the bulk of its computer equipment. The majority is found in Bldg. 4 at Plant 71, although Astro-operated and controlled units are found at Plant 19 and GD/Convairst Plant 1 also.

Operations are performed around the clock during the week and some machines are kept busy over weekends.

Data processing under Diesen is broken into five major functions, each headed by a chief. They are H. W. Buckner (scientific programming), R. G. Foster (business programming), C. E. Garner (operations), L. B. Albright (planning and control) and T. R. Dines (computer technology).

"Experienced and capable people are our major assets," Diesen said. "Our equipment performs remarkable tasks, but is only as good as the people who tell it what to do."

## Deadline Approaches For Mexico Trip

This is the final week for General Dynamics travelers to sign up for the specially-arranged summer trip to Mexico.

Deadline for registration and deposits, \$35 per person, is this Saturday, said Jim Hardison, GD/Convairst Dept. 15, conducting the tour.

Trip dates are Aug. 16 to Sept. 1. Travel will be by air-conditioned train from Mexicali to Mexico City, and bus to Acapulco. Entire cost of the two-week tour is \$350.

Full details are available from Hardison, 276-5805, evenings.

## New Guppy Strain Wins for Fountains

A new strain of tropical fish developed by Alice Fountain, wife of GD/Convairst Everett Fountain (Dept. 131) won the blue ribbon for color at the Southern California Guppy Show in Long Beach last month.

The "Fountain Half-Black" guppy won the judges' decision over at least 50 entries from a dozen states.

## Lou Canter to Lead Conference Session

Lou Canter, manager of library and information services at General Dynamics/Astronautics, will serve as chairman and moderator of a Special Libraries Association session June 9-13 in Denver.

Canter will preside over a session on Government Information Services. Panelists include top government and service information and library specialists.

Canter is president of the San Diego Chapter, Special Libraries Association.

## Shooters Turn Out at Gun Range For First 100-Bird Skeet Event

Thirty shooters from throughout Southern California competed for prizes in the first registered 100-bird skeet event sponsored by CRA-ARA Gun Club May 5 at Gillespie Field Range.

The invitational club shoot was the second NSSA registered shoot held by the Gun Club this year, and two more are scheduled. However, the others are 50-bird events, explained CRA Commissioner Jack Swank.

"We were pleased with the turnout," said Swank, "especially on the part of the ladies. We had four entered in this shoot, with one taking a second in her class. We'd very much like to have more of the fair sex trying their skill against the men."

Championship title went to John Fellows of Compton with a score of 99 out of 100 in the shoot-off.

Other winning marksmen were: Class AA-A—Homer Reed of El Cajon, first; Jim Dominca of Torrance, second, both with 99s. Class B—Ed Heilbron, first, 95; Alan Kest, second, 93. Class C—Robert Beckett, first, 96; Don Cost, second, 92; Class D—Wayne Olson, first, 97; Tom Hodgson of San Clemente, second, 94. Class E—Lester Nash, first, 89; Irina Reed, second, 85.

Mrs. Reed was lady champ with 85 and Lois Cullmer, runner-up, with 84.

Engraved bronze belt buckles went to first-place winners and other prizes to runners-up.

★ ★ ★

Winners of the registered ATA trapshoot held May 19 were: 16-yd. event—Class A, Jack Rogers of GD/Convairst, 81; Class B, Robert Cushman and Roy Coward tied with 95s out of a possi-

ble 100. Cushman won the shoot-off with 25 straight.

Class C was won by A. T. Higginbotham, 94; Class D, George Skurla, 98; Ed Barrett of GD/Convairst took the handicap event with a 93. Donald Jones was runner-up with 92. Ellis Rhodes topped the doubles event with an 84.

Midge Higginbotham won the ladies' crown after tying with Lois Smith with 96s.

This Friday night (May 31) the CRA-ARA club will sponsor a Troy-type trapshoot at the range at 7:30 p.m. Money accumulated during the last two Friday night trapshoots when no one broke 25 birds straight at 16-yds. or handicap will be put in the pot. Winners in each event will get \$30.

Regular club matches will be held Sunday morning (June 2).

## Syn Com Satellite Topic for AES Meet At IAS Bldg. June 6

Change in meeting place and speaker for the June 6 meeting of the Aerospace Electrical Society is announced by T. W. Ochodnicki of GD/Convairst, San Diego Chapter president.

All members and interested General Dynamics people are reminded that the session will be held in the IAS Bldg. on Harbor Drive at 7:30 p.m. next Thursday.

Design and mission of Syn Com I and the advanced Syn Com satellite will be discussed by L. A. Gustafson, assistant manager for the advanced Syn Com project at Hughes Aircraft's Space Systems Division, Culver City.

Gustafson, who replaces D. C. Worden, formerly of GD/Convairst, as main speaker, also will show color and sound movies and slides of the commercial version satellite's mission. Hughes is building the Syn Com under contract to NASA.

"We are particularly anxious that all GD people make an effort to attend this pertinent meeting," said Ochodnicki. "We are most fortunate to be able to present this type of program to keep our engineers apprised of the 'state of the art' of such advanced aerospace programs."

Information is available from Ochodnicki, GD/Convairst Plant 1, ext. 1164; James Carlson of GD/Astro, AES publicity chairman, Plant 1, ext. 2607; or Harvey Seibert, AES program chairman, at Astro Plant 71, ext. 2007.

## Astro Golfer Tops IRC Links Tourney

Dan Scott of GD/Astro took the championship flight and 10 other General Dynamics golfers were winners or runners-up in their divisions in finals of the annual Industrial Recreation Council golf tournament held May 4-5, 11-12 at Torrey Pines.

Altogether 81 of the 224 entries from San Diego companies were from GD—57 from GD/Astro; 13, GD/Convairst; and 11, GD/Electronics.

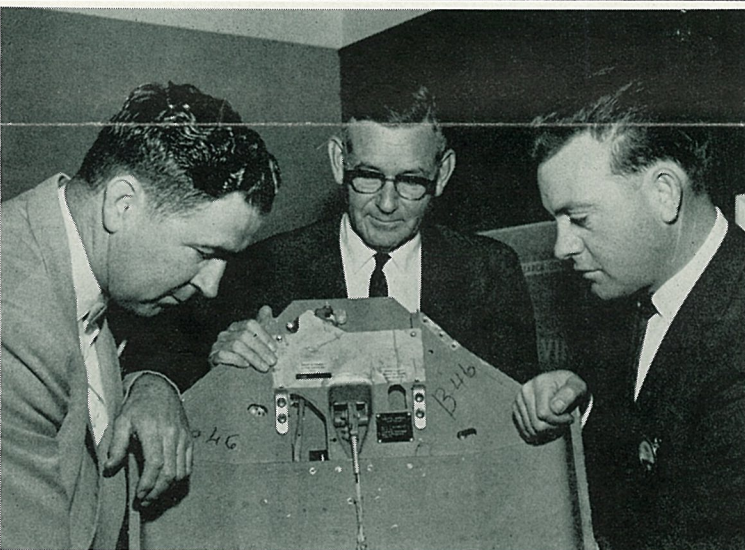
Norm Dahl of GD/Electronics won the trophy for first flight; Gene Pollpeter of GD/Convairst took the third flight.

Bill Cody of GD/E defeated Bill Ruzich of GD/Astro in the seventh flight. Gene McEachern of GD/Astro took the ninth flight. Jim Hearn of GD/E defeated Chet Kruk of GD/Astro in the 11th flight; Henrik Eskesen of GD/Astro defeated Jim Rose, also of Astro, in the 12th flight; and Glenn Smith of GD/Astro was 13th flight winner.

## Salvage Yard Sked Set for Four Weeks

Salvage yard schedule for the next four Saturdays at GD/Convairst and GD/Astro sites is:

GD/Astro—June 1, 15.  
GD/Convairst—June 8, 22.



VALUE LINE-UP—Latest group to complete GD/Convairst's continuing value control training form long row at close of 14th seminar May 17. At top are project leaders (from left) J. J. Zyirek, K. C. Atkin, and Nick Kosmas.



F. X. Marshall

1956 when he joined the company as test engineer in the Model 7 program, Marshall subsequently served in various capacities, including assistant test conductor, at Edwards Rocket Base (now ERS).

Following an assignment at Vandenberg AFB, he returned to GD/Astro's San Diego facility in 1960 as assistant project engineer, Dept. 510-3, and later served as project engineer, Dept. 360-1.

For the launch of the first Atlas-Centaur vehicle, he served as special assistant to the Centaur program director.

Marshall is a native of Johnstown, Pa., and received formal engineering training at University of Buffalo, N.Y.



## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

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**ARTS & CRAFTS** — Meeting 7:30 p.m., June 1, ARA Clubhouse. Ceramics demonstration.

**ASTRO LENS** — Model shoot at meeting, 7:30 p.m., June 2, Photo Arts Bldg., Balboa Park. Model will be "Miss Photorama."

**AUTOMOTIVES** — New club to organize at meeting, 1:30 p.m., June 1, ARA Clubhouse.

**CHORUS** — Rehearsals each Monday, 7:30 p.m., ARA Clubhouse.

**EXPLORERS** — Camp-out in Baja California, June 1, 2. Details, registration with Herm Reichert, ext. 2706, or Paul DuPre, ext. 4448.

**GARDEN CLUB** — Joint ARA-CRA meeting June 5, 7:30 p.m., ARA Clubhouse. Plant exchange.

**GOLF** — ARA Club tournament, Coronado, June 22-23. Best nine and blind bogey meet. Starting times, ext. 1111, June 10-19.

**HI-FI/MUSIC** — Swap night, 7:30 p.m., June 7; meeting 7:30 p.m., June 11, both ARA Clubhouse.

**RADIO CLUB** — Meeting 7:30 p.m., June 5, club station, ARA Clubhouse. Current club dues now payable: new members, \$3; renewals, \$2. Planning for ARRL Field Day in June.

**RIDING CLUB** — Meeting 8 p.m., June 1, home of Mr. and Mrs. Len Sidock. Hay ride, June 13. Details, Mrs. Joe Pena, 277-4629.

**ROCKHOUNDS** — Meeting 7:30 p.m., June 12, ARA Clubhouse. Installation of officers.

**SAILING** — Meeting 7:30 p.m., June 3, ARA Clubhouse. Planning for Mission Bay races.

**SKIN DIVING** — Meeting 7:30 p.m., June 12, ARA Clubhouse. Speaker, Keith Pope.

**TEEN CLUB** — Dance, 7:30 p.m., June 1 ARA Clubhouse. Live music. Admission 25 cents per person.

## 700 Clubmen Take Course

Some 200 students over the past year bring the total number of Astronautics Management Club members taking part in a special Management Development program to about 700 over a four-year period.

This popular club-sponsored program features three select courses offered in class sessions during winter months. They include "Principles of Managing," "Issues in Modern Management" and "Case Studies, Management Practice and Policy."

Thirteen different classes were conducted this year, each headed by an appointed moderator. Another series of classes will begin in the fall.

Ed Russell, president; Ralph Bauman, vice president, have teamed with Jack Croft, chief of educational services; Jim Duffy, educational committee chairman; and George Hunter, program coordinator, to make the series possible.

Moderators have included Bill Matselboba, Cy Rose, Bill Trask, Ed Bill, Dick McSwain, Warren Williamson, Joe Kiszla, Buzz Spurlock, Ernie Walley, Bob King, George Kaibel, Dan Fellers and Earl Sheeran.

**TRAILERS** — Meeting 7:30 p.m., June 4, ARA Clubhouse.

**WATER SKIING** — Skiing every Saturday, Sunday, 10 a.m.-4 p.m., Crown Point, Mission Bay. Business meeting, 7:30 p.m., June 5, ARA Clubhouse.

## Hi-Fi Club Repeats 'Swap Night' Feature

June 7 will be "swap night" in ARA Clubhouse, when at 7:30 p.m., under sponsorship of ARA Hi-Fi/Music Club, employees may buy, sell, or trade used hi-fi equipment.

ARA Commissioner Ben Lachance announced that a professional moderator will be available to check equipment for buyers "on the spot" using high quality test equipment.

Scheduled for Hi-Fi Club's meeting at 7:30 p.m. June 11 are guest speakers Larry Shushen and Jack Rabell, president and chief engineer, respectively, of a local stereo (multiplex) FM station.

## Explorers Schedule Trip to Santo Tomas

Camp-out in the region of Puerto Santo Tomas, Baja California, has been planned for this weekend (June 1-2) by ARA Explorers Club.

Employees wishing to participate have been asked to contact ARA Commissioner Herman Reichert, ext. 2706, or Paul DuPre, club president, ext. 4448, at Plant 71.

With Roy Kepner, director, San Diego County Division of Mines, as guide, the club crossed into Mexico southeast of Jacumba May 26.

## Divers Will Learn About Archaeology

Astro Divers, ARA skin diving club, will hear Keith Pope describe his experiences during underwater archaeological expeditions at a meeting, 7:30 p.m., June 12 in ARA Clubhouse.

A club abalone dive is scheduled for June 16.

Earlier this month, 35 Astro Divers competed in the club's annual "pool" meet at Buena Vista Gardens. Individual winner for the second consecutive year was John Smaldino. Jorge Zorrilla captained a group earning the most team points.

## Teeners Dance Again At ARA Clubhouse

ARA Teen Club will resume its regular series of dances with an event beginning at 7:30 p.m., June 1, in ARA Clubhouse.

A "live" band is scheduled, and one guest will be admitted with each Teen Club member. Sport clothes will be appropriate.

Admission is 25 cents.

## Rockhound Officers Will Be Installed

Installation of officers will be featured at the meeting of ARA Rockhounds, 7:30 p.m., June 12 in ARA Clubhouse. Also on the agenda are plans concerning the group's annual picnic.

Rockhounds' May field trip, organized by John Walker, took 30 members of the group to the Wintehaven area near Yuma, Ariz.

## Auto Club Schedules Organizational Meet

An organizational meeting of a proposed Automotives Club is scheduled for 1:30 p.m., June 1 in ARA Clubhouse following a preliminary session earlier this month.

The Saturday date was selected as convenient for both first and second shift employees, as the later group were instrumental in urging establishment of the club.

Plans for the organization call for a series of informative programs on all phases of auto mechanics to be held under ARA sponsorship.

All interested employees have been encouraged to attend the meeting.

## Bauman Wins Mgt. Club Vote

Ralph Bauman, president, heads a new slate of officers elected recently by Astronautics Management Club.

Winners in the annual election were announced at the May meeting. Installation will be held next month.

Other officers named were Tom McCubbin, first vice president; Jack Croft, second vice president; Don Slingsby, recording secretary; Frank Cook, financial secretary; and Jack Scanlon, treasurer.

Named to the Board of Control for one year were Norman Baird and James Evans. Robert King was selected to fill one two-year post, while Albert Amison and Maynard Bjorstrom will serve three years.

## Free Movies Shown During Lunch Hours

Free lunch-hour movies under sponsorship of GD/Astro Management Club are now being shown at both Plant 71 and Plant 19.

At the main plant, the "American Adventure" film series is presented in Room 3, Bldg. 17, with showings daily, except Thursdays, at 11:05, 11:35, 12:05 and 12:35. Details are available from E. W. Allen, ext. 635.

At Plant 19, the movies are shown in Bldg. 28 during both first and second shifts, with Dick Blair, ext. 1084, coordinating.

## Bridge Club Resumes Weekly Gatherings

Weekly meetings of ARA Bridge Club resume in ARA Clubhouse Friday (May 31) with play starting at 7:30 all nights.

North-south winners, Section A, at the monthly master point night May 10 were Mr. and Mrs. John Donan, with Mr. and Mrs. C. A. Miller, east-west. In Section B, Ann Stephens and Mary Saastad won north-south, and Mr. and Mrs. Ralph Emerson, east-west.

At the May 17 gathering, Mr. and Mrs. Phil Evans won north-south in Section A, with R. D. Sikes and H. S. Woodbury, east-west. In section B, north-south winners were Mr. and Mrs. Charles Thomas, while Mr. and Mrs. Paul Lewis won east-west.

## Sconyers Is Speaker For AFPRO Mgt. Club

E. Marvin Sconyers, Federal Mediation and Conciliation Service commissioner, was guest speaker at a meeting of GD/Astro's AFPRO Management Club May 21 at OceanHouse.

Other guests of the Air Force group included Fay B. Dunmire, assistant to Sconyers, the Hon. Percy B. Allen, member of New Zealand parliament, Bob Craig of GD/Astro, and Fred Bettinger of GD/Convair.

Nomination of candidates for election to club office at the June meeting were also held.

# Sports & Recreation

## ARA Ball Club Wins Three In San Diego Exhibition League

ARA baseball team, playing in San Diego summer exhibition league, has won three and lost one in pre-season play, with 25 players competing for 19 slots on the regular team.

Thus far, Astro has scored victories over Oceanside and split with Naval Hospital.

In the first Oceanside contest, the ARA group triumphed 8-7 on a ninth inning single by Gene Wells, Dept. 758, and then repeated the win, 10-3, in a return match.

In the second game with Oceanside, Charles Johnson and Dennis Allison drove in seven runs,

sharing two singles, three doubles and a triple.

In its first game with Naval Hospital "Lancers," Astro lost 6-9, but defeated the corpsmen 5-4 in a return bout.

Fine pitching performances by Hilbert Murillo and Bill Murphy highlighted this contest, which was deadlocked in the ninth before a single from Larry Buschow and a triple by Bill Murphy turned the tide for Astro.

Don Sanchez, Dept. 522-3, manages the ARA group.

## Officers Elected By Explorers Club

Paul DuPre, president, heads newly-elected officers of ARA Explorers Club, with Dick Bowen, vice president, Ginny Gilmore, secretary, and Jim Klapp, treasurer.

Other club officials are Charles Kull, field officer, John Smaldino, entertainment, and Ed Rosenkranz, equipment.

Herman Reichert is ARA commissioner.

The club, which recently marked its second anniversary in operation, offers a diversified program of outdoor activity to more than 80 GD/Astro employees and their families who now participate.

Others interested in the group may obtain additional information by contacting ARA Headquarters, ext. 1111, or Du Pre, ext. 4448.

## ASTRO NOTES PERFORM FOR LOCAL LODGE

Astro Notes, ARA choral group, performed recently for 100 members of Odd Fellows Lodge No. 328, assembled at Sunset Hall, North Park. Astro employees and members of their families wishing to participate in the group's activities have been invited to attend Monday meets.

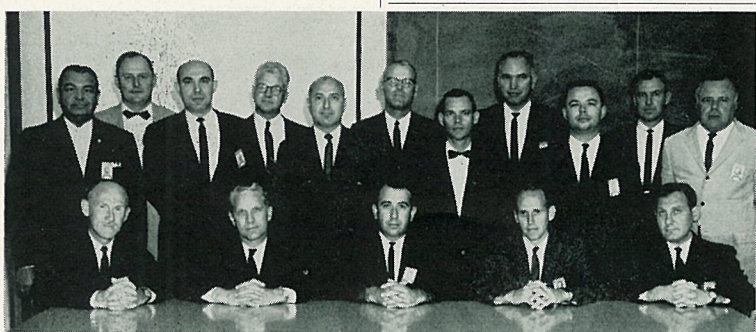
## Bowlers Win \$5,000 Purse

Members of ARA's representative bowling team collected \$1,000 each by winning the recent \$5,000 classic tournament at Parkway Bowl.

The Astro group "hit the jackpot" by besting Morgan Linen in five of six games. Astro won three in the first four-game block; then came back in the second round to win two straight.

The championship was roll-off between first-half (Morgan) and second-half (Astro) titlists.

Phil Genser had a six-game total of 1,173 pins for the Astro team, followed by Walt Adsit, 1,169, Forest Erwin (team captain), 1,163, Tony Zullo, 1,142, and Emanuel DiGuilio, 1,130.

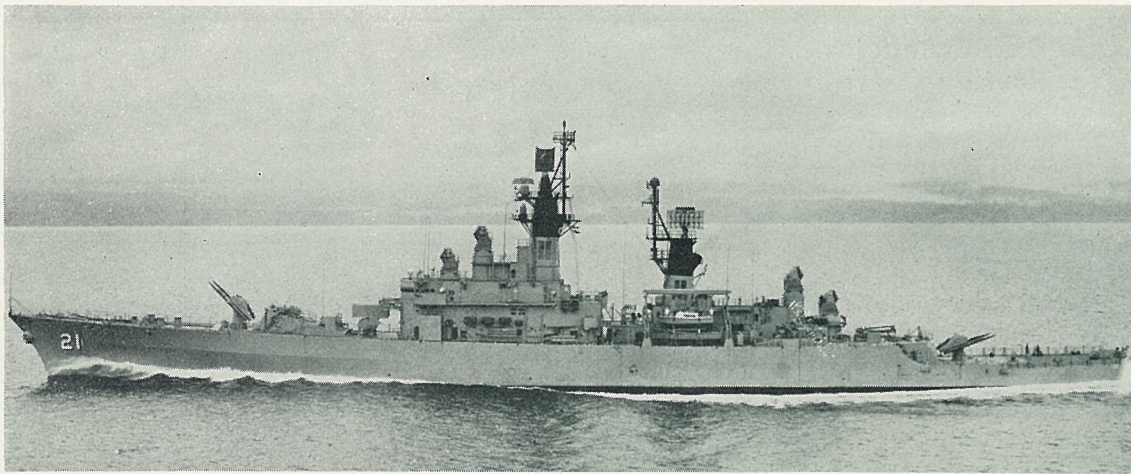


**IMPRESSIVE**—More than 700 Astro Management Club members, including 200 in past year, have taken part in Management Development program. Men seated, from left: Jim Duffy, Ralph Bauman, Ed Russell, Jack Croft and George Hunter, have directed program. Men standing, from left, Bill Matselboba, Cy Rose, Bill Trask, Ed Bill, Dick McSwain, Warren Williamson, Joe Kiszla, Buzz Spurlock, Ernie Walley, Bob King, George Kaibel, Dan Fellers and Earl Sheeran, have moderated courses.



**\$1,000 SMILES**—Members of GD/Astro representative bowling team beam with pleasure after winning \$5,000 Classic League at Parkway Bowl recently. From left are Forest Erwin, captain, Tony Zullo, Emanuel DiGuilio, Phil Genser and Walt Adsit.





NAVY'S NEWEST — USS Gridley (DLG-21), armed with GD/Pomona-built Advanced Terrier missiles fore and aft, is shown during sea trials. C. D. Perrine Jr., executive vice president, represented company at commissioning ceremonies Saturday (May 25) at Puget Sound Naval Shipyard, Bremerton, Wash.

## DYNAMICS RECEIVES SILVER MEDALLION AS AVIATION GIANT

General Dynamics was among 40 giants of the aviation industry to receive silver medallions from Aviation Space Writers Association for having served the industry for over 25 years.

Frank W. Davis, GD/Fort Worth president, accepted the award on behalf of Roger Lewis, Dynamics' president, at a banquet May 21 at Adolphus Hotel in Dallas.

The nostalgic tribute to aerospace included a slide collection showing aircraft manufactured in 1938, the year AWA was established.

Columnist Bob Considine was master of ceremonies at the banquet.

## GD/Pomona's Sinks Addresses Institute

G. H. Sinks Jr., General Dynamics/Pomona manager of employment, spoke April 26 at a spring institute of International Association of Personnel in Employment Security held in Pomona. The institute was cosponsored by University of California at Los Angeles.

Theme of the two-day institute, attended by 400 persons from 60 state employment offices in Southern California, was "Place of Employment Services in the Community." Included in discussions were representatives of labor, industry and education.

## Dynamics Exhibit Sent To Paris For Air Show

General Dynamics products will have a prominent place next week when the 25th Paris International Air Show opens (June 7-16) at Le Bourget airport.

Demonstrations of swing-tail cargo loading using a Canadair-built CL-44 turboprop transport will be a feature. Another Canadair airplane, the CL-41R advanced systems trainer, will be on display and GD/Convair-built F-106s also are scheduled to take part.

Among exhibits will be one from GD/Pomona, marking that division's first participation in the show.

Both Tartar and Mauler will be featured. A booth, with 30-foot front, will occupy an area covering 60 square meters in the missile section of the show.

Shown will be a Tartar display

## Newest Navy Warship Named For 'Fire When Ready' Gridley

The guided missile frigate Gridley (DLG-21), third ship of the fleet to be named in honor of Capt. Charles V. Gridley, USN, was commissioned Saturday (May 25) at the Puget Sound Naval Shipyard in Bremerton, Wash.

The Gridley is the 14th Advanced Terrier-armed frigate to be commissioned. General Dynamics/Pomona-built Advanced Terrier missiles also arm six cruisers and two carriers.

GD/Pomona was represented at the commissioning ceremony by C. D. Perrine Jr., executive vice president. Perrine, on behalf of the company, presented the ship with a set of ceremonial quarterdeck stanchions, modeled after the Advanced Terrier missile.

Captain Gridley, for whom the ship is named, distinguished himself "beyond all praise" during the Battle of Mobile Bay on Aug. 5, 1864, shortly after his graduation from the Naval Academy. Serving on board the steam sloop-of-war Oneida off Mobile, Ala., he had charge of the master's division and assisted in conning the ship from the topgallant forecastle during the battle.

However, Captain Gridley was to gain everlasting renown later at Manila Bay as commanding officer of the protected cruiser Olympia, flagship of Asiatic Squadron. Adm. George Dewey's squadron stole past the batteries on Corregidor and arrived off Manila Bay near daybreak on May 1, 1898.

Admiral Dewey in his autobiography recounts: "At 5:40 when we were within a distance of 5,000 yards, I turned to Captain Gridley and said, 'You may fire when you are ready, Gridley.'"

Captain Gridley personally conducted the gunfire throughout the battle which ended in destruction of Spain's Philippine Fleet. He was on his way home when he died at Kobe, Japan, June 5, 1898.

## GD/E Exhibits S-C Printer

General Dynamics/Electronics-San Diego demonstrated its S-C 3070 Electronic Printer at the Spring Joint Computer Conference in Detroit, Mich., last week.

The S-C 3070, designed for office, communications, or computer centers, is capable of printing a character at a time at speeds up to 5,000 words per minute.

Utilizing an electrostatic process, the non-impact printer produces legible permanent copy which can be used as a litho master to produce multiple copies for office distribution. The printer operates on-line or off-line with digital computer systems and is compatible with most available data transmission terminals.

Representing GD/Electronics at the May 21-23 conference were N. E. Frawley, industrial requirements assistant manager; D. O. Brending and H. G. Cooper, requirements representative; S. R. Viejo of requirements research; J. H. Gurley, manager Army requirements; Ron McClure, senior field service representative; Payne Johnson, manager of communication, and Helen Wood of communication.

## Manual Published By Convair Editor

"Programmed Instruction — Training Manual" has just been published by J. D. Meacham, GD/Convair publications editor, after more than a year of research.

The manual is pointed directly to the "workers" in the field, such as instructors, programmers, editors, training directors, technical writers.

The 230-page loose-leaf book was printed in GD/Convair graphic reproduction and is available from J. Ravin Publications, 4215 Calavo Dr., La Mesa, Calif.

## Ex-Patrol Boat Serves In GD/Astro Research

Sound and the sea are subjects of continuing research carried on by General Dynamics/Astronautics in Southern California coastal waters.

Heart of the research effort is "Rorqual," an 83-foot floating laboratory, originally a World War II Coast Guard patrol boat, later converted for use as a private yacht.

After its acquisition by GD/Astro, the boat was fitted with specialized electronic equipment (in addition to extensive navigational and communication gear, radar and depth sounder already on board).

Research utilizing Rorqual is aimed at acquiring data on transmission of oceanographic problems associated with underwater communication. Studies are related to work on advanced missile system programs now under way at GD/Astro under Project Engineer Kerry E. Coughlin, Dept. 580-4.

A small boat, carried aboard Rorqual, is launched to serve as a platform and recording station for communication equipment which is lowered into the sea for tests at various depths under varied conditions. At the same time, associated equipment is lowered from Rorqual.

Rorqual is "home ported" at GD/Convair's ramp facility on San Diego Bay, and when under

way is commanded by Coughlin or by Dr. C. G. McIlwraith, in charge of communication studies. R. E. Johnson normally handles electronic operations aboard ship.

Wynne Bowen serves as "chief of the boat"; Stan Hoyceki is engineer; and G. R. Cooke and W. W. Bacon Jr., round out the crew.

Rorqual's operations are directly supported by a shore-based electronics lab housed in a van at the ramp facility. Here, equipment is calibrated and repaired, and new test devices are constructed to meet growing program requirements.

Leon Resnick handles these related operations ashore, while Ben Swett serves as design engineer for special devices used aboard Rorqual.

George Brolaski, project operations manager, arranges for production of much of this specialized equipment in GD/Astro's main plant tooling department.

In the past, Rorqual has gone to sea for less than 24 hours at a time, although research operations of up to four days' duration and ranging from Dana Point southward to the international border are planned for the near future.

The boat is capable of sustained operations up to 2,000 miles round-trip with a crew of 10 on board.



ASTRO SAILORS — William Bacon and Wynne Bowen, members of Rorqual crew, are in foreground, as GD/Astro's oceanographic research vessel lies off seaplane ramp facility on San Diego Bay.

## New Centaur Lighter Seen To Carry Heavier Payloads

Ozone difluoride, a substance whose maximum production is now one-third ounce per hour, is under study as a mixture with liquid oxygen to ignite such high-energy space vehicles as General Dynamics/Astronautics' Centaur.

Centaur employs an electrical ignition system because its propellants, liquid hydrogen and liquid oxygen will not ignite on contact.

National Aeronautics and Space Administration's Lewis Research Center which guides the Centaur program has issued a contract for further study on mixing liquid oxygen with ozone difluoride. Preliminary tests show that a tiny quantity of the latter will cause liquid oxygen to ignite immediately on contacting liquid hydrogen. Extensive testing of this phenomenon is currently in progress.

(At General Dynamics/Astronautics technicians in the propulsion systems design group of engineering are looking into this field along with others related to high-energy propulsion.)

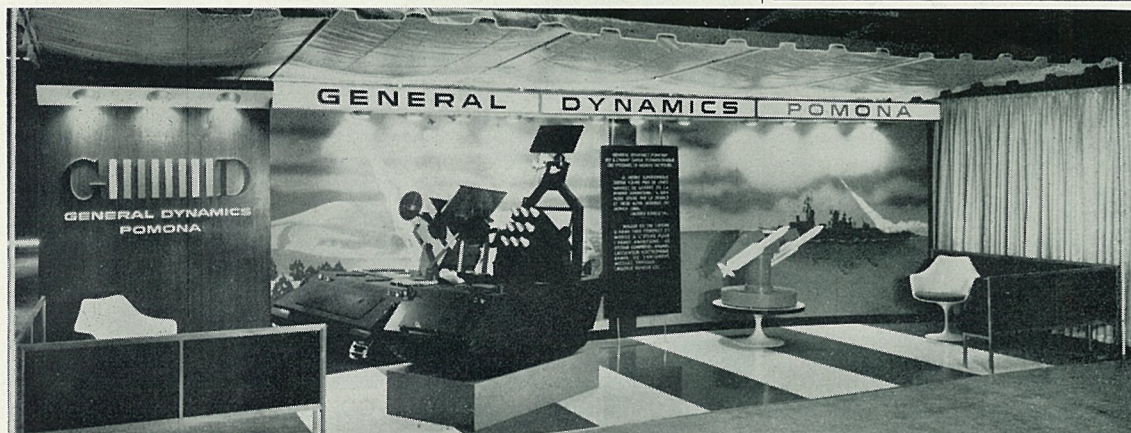
Lewis Center's Donald L. Nored summarized work with ozone difluoride and its potential with that of hydrogen/oxygen.

He said that, using the Atlas-Centaur rocket vehicle as a boost-

er, fluorine oxidizer in an upper-stage solar probe could carry a 25 per cent heavier payload than the oxidizer could manage. The payload capacity of a Mars orbit mission would be similarly increased with vehicles using fluorine.

## Astro Chief Counsel On National Panel

H. Cushman Dow, GD/Astronautics chief counsel, has been named to the national panel, American Arbitration Association.

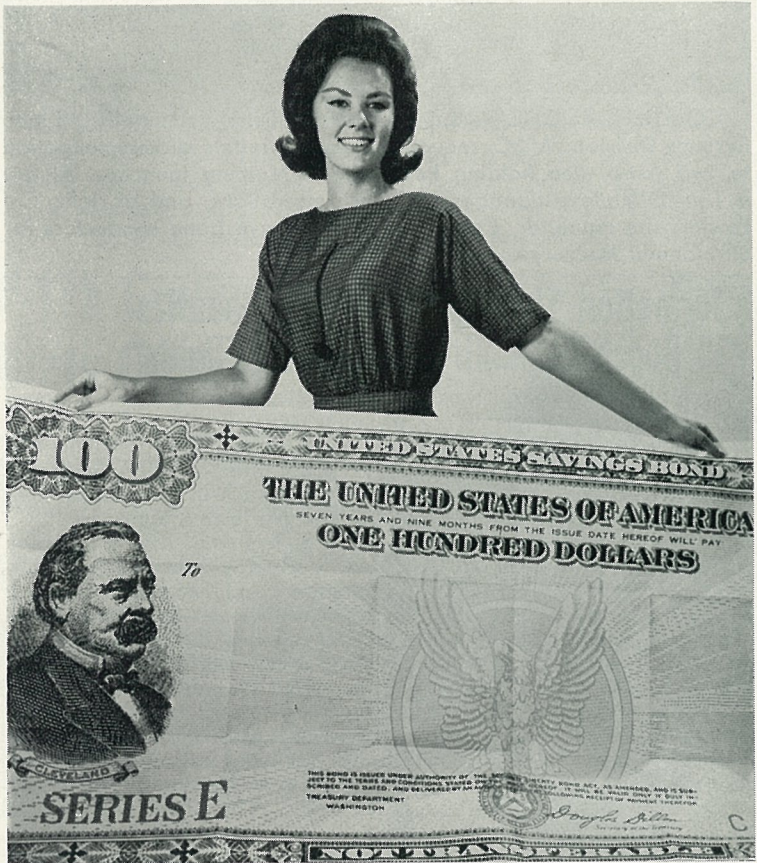


DYNAMIC DISPLAY — This GD/Pomona exhibit will be on display in Paris next week, offering a capsule introduction to such products as Terrier, Tartar and Mauler.



"Well today I learned that your arithmetic is lousy, too."





**KING SIZE**—Maybe this is carrying it a bit far, but U.S. Savings Bonds do produce king size values when held to maturity. GD/Astro's Georgia Lueth (Dept. 524-5) sets theme for current drive to increase bond buying by payroll deduction.

## GD/Astro's Kalitinsky Describes Preliminary Designs for NOVA

Preliminary designs for the launch vehicle which may boost a new species of super-spacecraft into orbit for assembly and ultimate manned flight to the planet Mars were described last week by a General Dynamics/Astronautics executive. GD/Astro Program Director Andrew Kalitinsky discussed design studies for NOVA—biggest launch vehicle now contemplated by National Aeronautics and Space Administration (NASA)—before the American Astronautical Society "Symposium on the Exploration of Mars," in Denver.

GD/Astro has been conducting a study under contract with NASA's Marshall Space Flight Center, Huntsville, Ala. A parallel contract is held by Martin Marietta Corp.

"Thus far we have examined

a variety of possible propulsion systems and vehicle configurations, with the field now narrowed to six promising designs," Kalitinsky said.

"These are being analyzed in greater detail, and we are investigating the extent of cost reductions to be achieved by recovery and re-use of certain components such as engines or complete vehicle stages."

He said the launch vehicle could be more than 400 feet tall, and produce more than 20-million pounds thrust!

Despite this power, a NOVA-boosted trip to Mars would be divided into two segments. The first, requiring several launches, each lifting supplies, equipment or men into space, would involve assembly of spacecraft in earth-orbit.

Convoys of perhaps four of these assembled spacecraft — each weighing 1½ to 2-million pounds, would then make the remaining leg of the journey to the "red planet."

NOVA belongs to the genera-

(Continued on Page 2)

## \$\$ Drawing to Climax Bond Sign-Up Drive

General Dynamics/Astronautics employees everywhere join next week in a united effort to encourage purchase of U. S. Savings Bonds through payroll deduction.

The campaign begins Monday (June 17) and closes June 30.

Concurrent drives will include other General Dynamics divisions, keyed to a nationwide effort among major companies aimed at boosting the percentage of bond buyers to 70 per cent or more of employment.

GD/Astro enters the campaign with 45 per cent participation.

Roger Lewis, president of General Dynamics, has voiced a deep personal interest "in having our Corporation effectively support this effort."

J. R. Dempsey, president of GD/Astronautics, this week added his strong support to the campaign.

"Maintaining a stable economy is as important to our national welfare as the weapons and scientific products we build," he said. "We have an unusual opportunity to contribute to both—as well as to personal financial security—by buying bonds regularly."

"I recommend that each non-buyer give this his most careful consideration."

Dempsey reviewed the obvious advantages of buying bonds regularly: an easy means of building



J. R. Dempsey

family savings for emergencies or "something special" in the future; 3½ per cent interest when bonds are held to maturity; insured savings, since bonds if lost can be replaced; funds to support defense and scientific programs.

During the Astronautics' drive employees will be grouped into 10 major reporting units, each headed by a member of Dempsey's staff. Each reporting unit will vie with the others in reaching set goals of at least 70 per cent participation.

Campaign coordinators, one for

### Open House Planned By GD/Astronautics

General Dynamics/Astronautics will open its doors to the community on Saturday, July 13, in observance of the fifth anniversary of the dedication of the division's Kearny Mesa facility.

Special security arrangements will permit employees to host their families and friends on tours of most portions of Plant 71, the materials building (92) and Plant 19, although some facilities will be necessarily restricted.

The company is arranging the event with full cooperation of the Air Force and NASA. The open house is designed to demonstrate GD/Astro's record of achievement and growth to the entire community.

Preliminary plans call for numerous demonstrations and displays, and a variety of special events between 9 a.m. and 6 p.m. Honored guests will include some of the nation's leading figures in the aerospace field.

each unit, and sub-coordinators met today (June 12) to receive detailed instructions, campaign literature and tab cards for all employees on the active payroll.

(Off-site bases received this material earlier, but will conduct their efforts in conjunction with the Plant 71 effort and will be a part of the reporting unit to which they belong.)

Two lucky Astronautics employees will receive U. S. Savings Bonds with a maturity value of \$125 as a climax to the current campaign.

Each new bond buyer, and each present buyer retaining his allotment, will be eligible. Individual cards for these employees will be deposited in a special container.

At noon July 3 in the outdoor dining area adjacent to employee services office (cafeteria building) two cards will be removed from the container.

The first will receive a \$100 savings bond, the second a \$25 bond.

Employees do not have to be present to win.

Beginning Monday (June 17) campaign workers will contact every Astro employee. Those currently buying bonds will be given an opportunity to increase their allotment for bonds. Those not buying bonds will be asked to join the payroll deduction plan, authorizing deductions as low as \$1.25 per week for hourly employees or \$2.50 per pay period for salaried employees. Naturally, larger amounts are encouraged.

Throughout the campaign bulletin boards will show daily participation figures for each reporting unit.

All employees will be asked to initial tab cards presented them during the drive.

Final day for turning in campaign cards will be June 24.



**HONORS**—Air Force Ballistic Systems Division commander, Maj. Gen. W. Austin Davis, presented special honors to Astro quartet for Atlas base activation recently. Trio at right, Ronald Wasser, George Lauder milk and Lou Lau received BSD Commander's Award. E. J. Huntsman, second from left, won Air Force Systems Command Award. Phil Prophet, formerly director of base activation, is at left.

## Huntsman Receives AFSC Award; Three Others Honored by BSD

Edward J. Huntsman, chief of material operations at General Dynamics/Astronautics, has been honored for his work as manager of base activation during installation and checkout of operational Atlas facilities.

In ceremonies at Norton AFB, Huntsman received the Air Force Systems Command Award signed by Gen. Bernard Schriever. It was presented by Maj. Gen. W. Austin Davis, commander of the Ballistic Systems Division, AFSC.

At the same time BSD Commander's Awards went to Astro's Laval "Lou" Lau and Ronald Wasser for site activation work and George Lauder milk for his part in the deactivation portion of the Atlas program.

President J. R. Dempsey of Astro took part in the ceremonies.

Huntsman's citation recognized "outstanding leadership and extreme devotion to duty in the interest of the Air Force and the United States." Huntsman was cited for having "personally introduced, developed, integrated, and implemented, under difficult circumstances, management techniques which resulted in timely activation of operational Atlas

Series "E" and "F" intercontinental ballistic missiles."

Gen. Davis praised the spirit of cooperation that existed between the Air Force and Astronautics and cited it as an example of government-industry teamwork that enabled the nation and the free world to achieve a deterrent force.

## Centaur 'Tiger Team' Created

Creation of a Centaur "Tiger Team" at General Dynamics/Astronautics has been announced by President J. R. Dempsey.

Heading the effort is P. M. Prophet, on special assignment reporting to Grant L. Hansen, vice president and program director—Centaur.

Departmental representatives include D. L. Morehead, research, development and engineering; L. L. Medlock, quality control; R. E. Muelchi, material operations; S. J. Barinka, manufacturing operations; J. S. Randazzo, procurement; F. B. Wozniak, space launch vehicle project; and F. R. Lucas, Centaur project.

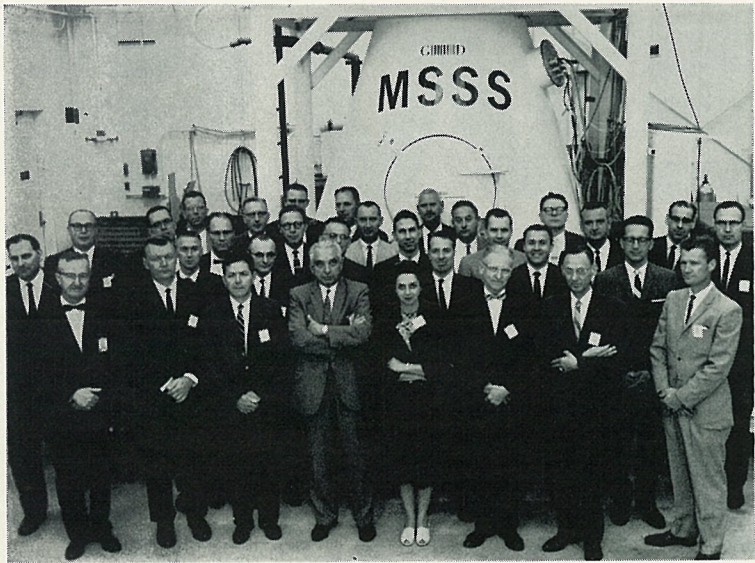
The Centaur control room, Bldg. 26, will serve as central control point for all activities.

Dempsey indicated that the success of Centaur is extremely important to the nation's space effort and is dependent upon vigorous and aggressive action by all elements of Astronautics.



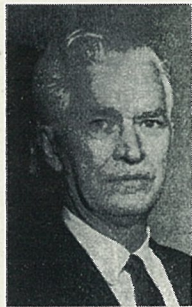
**SPACE CONVOY**—Advanced, manned spacecraft as shown in this artist's conception might be launched by NASA's huge NOVA launch vehicle described in recent paper by GD/Astro's Andrew Kalitinsky. GD/Astro holds study contract for preliminary design of NOVA, slated for use in 1970's.



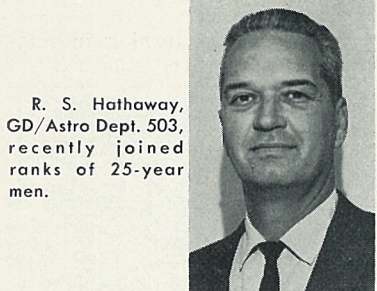


**SPACE PARTS** — Recently established industry advisory committee, called Space Parts Working Group, poses in front of GD/Astro Manned Space Station Simulator during part of three-day meeting. Group spent three days in conference, toured Astro facilities.

## Log Book Entries



C. M. Tyner, GD/Astro Dept. 143-7, recently received his 25-year service emblem.



R. S. Hathaway, GD/Astro Dept. 503, recently joined ranks of 25-year men.

## Service Emblems

### MAIN PLANT

Service emblems due during the period June 1 through June 15.

Twenty-year: Dept. 032-2, E. G. Brittain; Dept. 352-3, D. L. Boyle; Dept. 661-3, K. W. Andrews; Dept. 684-4, A. W. Grindle; Dept. 732-0, R. E. Bourne.

Fifteen-year: Dept. 144-4, J. E. Hisaw; Dept. 324-6, S. W. Seddon; Dept. 344-3, A. R. Seitz; Dept. 369-1, H. E. Pickett; Dept. 370-3, D. B. Mandel; Dept. 377-0, G. C. Congdon; Dept. 382-1, C. E. Howard; Dept. 401-3, Julia M. King; Dept. 404-1, E. G. Pitzer; Dept. 523-7, R. C. Hager; Dept. 573-4, E. H. Johnson; Dept. 642-1, C. S. Kempff Jr.; Dept. 758-0, F. P. Vining; Dept. 836-1, R. D. Beare.

Ten-year: Dept. 143-4, Walter Passino; Dept. 250, O. C. Coffman; Ursula G. Garside, B. L. Keim, W. P. Riley; Dept. 290, V. H. Folsom, C. M. Ogle; Dept. 324-4, J. R. Hass; Dept. 337-2, Harry Anderson; Dept. 388-1, R. E. Parker; Dept. 410-0, J. G. Hickey.

Dept. 451-0, A. A. Morse; Dept. 452-0, J. W. Palmer; Dept. 547, M. J. Borcherdt, B. A. Penners, H. A. Vaughn; Dept. 716-0, Mary C. Stevens; Dept. 831-1, Alice N. Rehstock; Dept. 832-1, Francisca M. Pumar; Dept. 953-3, H. J. Hartin; Dept. 954-1, O. P. Liebreich Jr., Elleanor A. Slater.

## Births

### MAIN PLANT

COSTAS—Son, Philip, 8 lbs., 6 oz., born May 28 to Mr. and Mrs. James Costas, Dept. 989-3.

REED—Daughter, Debra Lyn, 7 lbs., 1½ oz., born May 6 to Mr. and Mrs. Leland Reed, Dept. 756.

WILEY—Son, Ross Alan, 8 lbs., 8 oz., born May 25 to Mr. and Mrs. C. L. Wiley, Dept. 521-6.

## Retirements

### MAIN PLANT

TEFFT—Charles G., Dept. 143-2, Seniority date, July 11, 1940. Retired March 1.

# General Dynamics NEWS

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## New Schedules Speed Trips Between Plants

Employee transportation among GD/Astro San Diego facilities will be speeded by new arrangements announced recently by E. D. Bryant, vice president-operations.

Company bus schedules have been modified to provide more effective service, and company passenger cars have been reassigned to two pools, one at Plant 71 and another at Plant 19.

Bus Routes A and B now link the main plant, Plant 19 and GD/Convair Plant 1. Route A (southbound via Washington Ave.) operates every 30 minutes beginning at 7 a.m., and Route B (northbound via Hwy. 80) runs at 30-minute intervals starting at 7:30 a.m.

Route C connects Rose Canyon with Bldg. 19, via Plant 19, leaving Bldg. 19 hourly on the half-hour starting at 7:30 a.m. Return trips leave Rose Canyon on the hour, beginning at 8 a.m.

Route D, Rose Canyon to Plant 71, operates hourly, starting from Plant 71 at 7:30 a.m., with the first trip from Rose Canyon at 8 a.m.

Route E is a shuttle service linking the main plant with the materials building (92) and operating at 20-minute intervals. In addition, scheduled station wagon service is provided to Point Loma and Sycamore Canyon from the main plant.

Assignments of passenger vehicles for authorized special trips are now made by car pool dispatchers at Plant 71 (ext. 1515) and Plant 19 (ext. 1174). These vehicles will not be assigned for trips to sites served by company buses, except in emergency cases.

## Babcock Appointed Vendor-Value Chief

Russell N. Babcock has been named chief of the vendor research and value analysis section of material department at General Dynamics/Astronautics by Frank J. Traversi, vice president-administration.

A graduate of the University of Illinois at Champaign, Babcock joined Astro in 1955. He has served as a senior buyer, buying supervisor and purchasing agent.

## Papers Presented

ANDERSON—David L., Dept. 032-6, "A Quadrature Subcarrier Technique for Transmission of Two Independent PCM Channels," National Telemetering Conference, Albuquerque, N. M., May 20-22.

BEYER—Walter, Dept. 290-2, "Design of Experimental Tooling for Hydro-Chemical Forming," ASTME, New York, May 21-22.

LLOYD — Joseph R., Dept. 592-3, "Metric Methods by Structural Analysis," San Diego State College, May 25.

McLEOD—John, Dept. 598-0, "Manned Spacecraft Simulation," American Federation of Information Processing Societies, Detroit, Mich., May 21.

## Personals

### MAIN PLANT

Our sincere thanks for the many kindnesses extended at the recent loss of my father and sister.

Barbara Dyson, Dept. 527-2 and family.

### VANDENBERG AFB

Many thanks to our General Dynamics friends at Vandenberg AFB, San Diego and Pomona for your kindness and sympathy upon the death of my husband, Clifford.

Mrs. Ardia Nix and family.

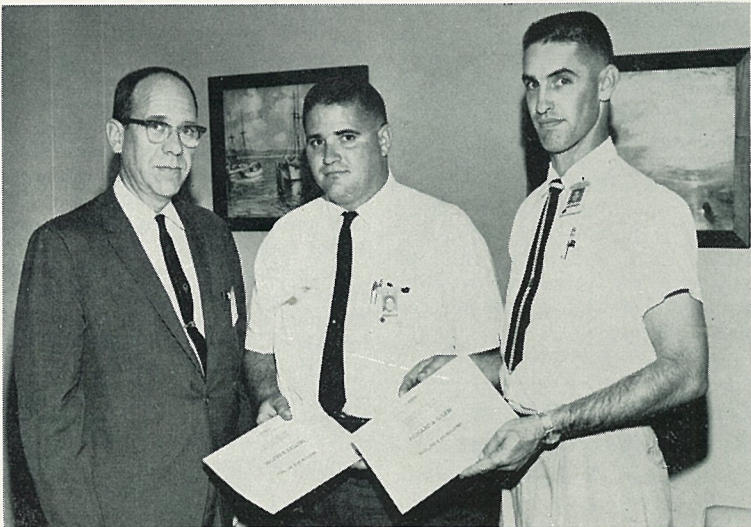
## Deaths

### MAIN PLANT

GANNON—William F., Dept. 783-0, Died May 28. Survived by wife, Adele.

## Keith Blair Elected Library Assoc. Head

Keith G. Blair, supervisor of library and information services at GD/Astronautics, has been elected president of the Special Libraries Association, San Diego Chapter.



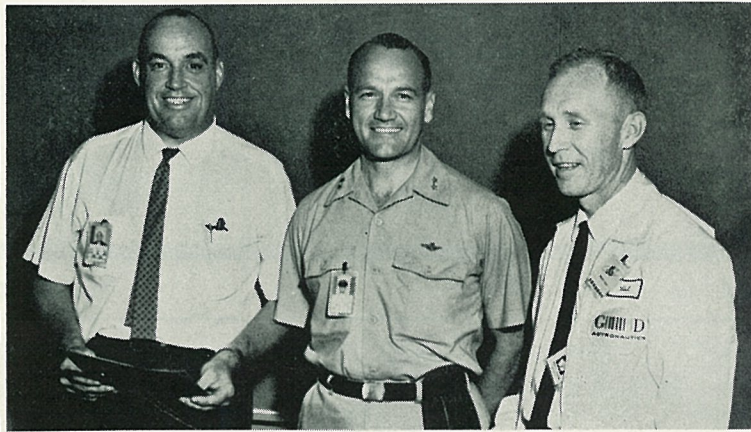
**NEW JOURNEYMEN** — Receiving graduation certificates recently from E. D. Bryant, GD/Astro vice president - operations, upon completion of apprenticeship program were, Walden Kellogg, center, and Richard Golem, right. Both fulfilled apprenticeship in tool, die and jig building.

## J. R. Mitchell Named Recreation Assn. Vp

J. R. "Dick" Mitchell, chief of employee services at General Dynamics/Astronautics, has been named a vice president of the National Industrial Recreation Association.

His selection came during the recent national NIRA Conference at Minneapolis. Mitchell continues as a director of the group which includes some 600 members throughout the North American continent.

C. J. Hu<sup>1</sup>, business manager of GD/Fort Worth Recreation Association, was named a director.



**COMMENDATIONS** — Maj. Gen. Ben I. Funk, commander, Space Systems Division, AFSC, recently presented letters of commendation to two Astro men holding key posts in Mercury launches. At left is Tom O'Malley, manager of launch operations, and at right, Cal Fowler, site manager, Complex 14. They have been conductors for all manned Mercury space launches.

## Information Sharing by GD/Astronautics Will Boost Reliability for Gemini Flights

General Dynamics/Astronautics and the Martin Company are in the midst of a unique aerospace industry "knowledge-sharing" program aimed at enhancing the reliability of the booster selected for the two-man Gemini spacecraft.

Astronautics has been making available knowledge gained in design, development, launch and reliability program of the Atlas launch vehicle which has proven 100 per cent successful in manned launches in Project Mercury.

(Both Mercury and Gemini programs are under the direction of the National Aeronautics and Space Administration's Manned Spacecraft Center. The Air Force provides launch vehicles for both programs.)

Initially, the Air Force requested that Martin Co. Gemini personnel familiarize themselves with Astronautics' highly-successful pilot safety program for Mercury. Information-sharing was continued, enabling Martin personnel to review management procedures and technology developed by Astro to achieve its perfect Mercury

reliability record for manned launches.

C. S. Ames, vice president and program director—SLV, indicated the program will continue as long as the Air Force approves it.

"We feel that the knowledge we've already amassed in 10 unmanned and manned Mercury launches—knowledge which should be invaluable to the nation's future space flight effort—should be made available to other contractors," Ames said.

Atlas' precision launch capability will be used in the Gemini program to place a target vehicle in orbit. The Gemini crew will practice rendezvous and docking with the target vehicle as a prelude to more advanced programs for orbital assembly of spacecraft for lunar and interplanetary flights.

## Astro Mgt. Club To Fete Wives At June Meeting

An informal dinner-dance in the International Room, El Cortez Hotel is planned for members of GD/Astronautics Management Club and their ladies on June 22.

Sponsor is the space launch vehicles project, with C. S. Ames, vice president and program director, host for the event.

The evening will open with a social hour from 7 to 8:30 p.m., with a dinner of beef prime rib served from 8 to 9:30. Dinner music will be provided by the Bustom-aire combo, and Buster Carlson and his Astro band will play for dancing until 1 a.m.

The dance committee headed by Dick Campbell has arranged for special favors for the ladies.

Committee members include F. J. Patton, John Christy, Otto Hamburg, Frank Ferrone, Fred J. Schulz, K. S. Telfer, Gregg McMillan, Len Anding, Larry Tuttle, C. D. Swearingen, Glenn Vail and C. J. Stafford.

Tickets, expected to be in heavy demand, are available from committee members, and from Management Club Boosters throughout GD/Astro facilities.

## Kalitinsky Describes Designs for NOVA

(Continued from Page 1)

tion of U. S. space launch vehicles which may follow NASA's present Saturn rockets, to cope with heavy-payload space missions of the 1970s.

As program director, Kalitinsky heads a team of top management personnel, engineering, reliability and manufacturing experts concentrating their talents on a program to which GD/Astro President J. R. Dempsey has assigned highest company priority.

R. P. White is deputy NOVA program director, and D. P. Wright, deputy program director-administration. J. C. Duffy is manager of manufacturing engineering, M. L. Goldberg, manager of reliability control, and W. G. Hardy, manager of test planning and facilities.

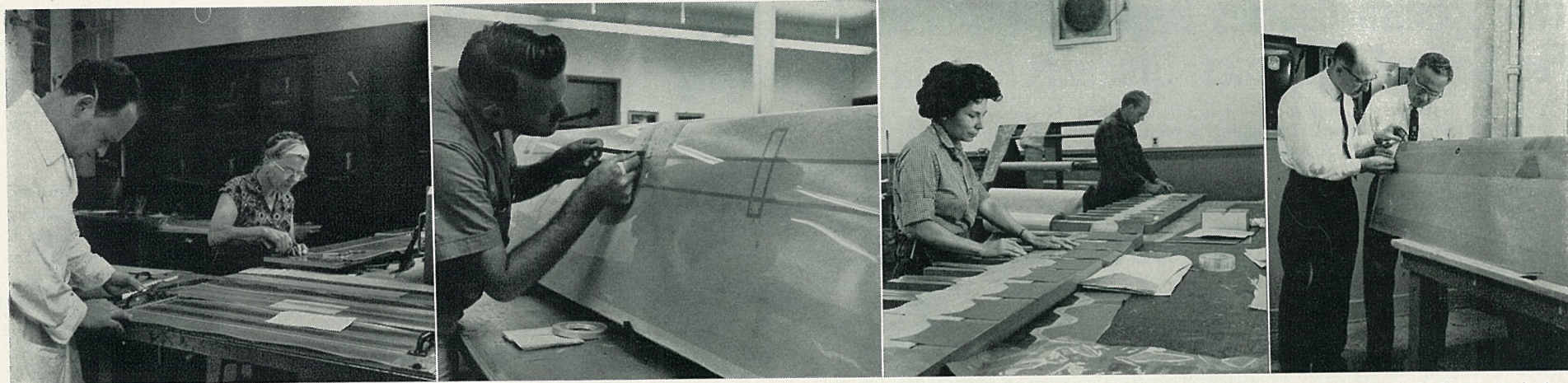
J. P. Wamser is chief of NOVA design engineering, and R. L. Donoghue works with the program on material and subcontracts.

## Interim Financial Report Issued by Con-Trib-Club

Following is an interim financial report covering affairs of the Employees' Con-Trib-Club at General Dynamics/Astronautics. This report covers the fiscal period October 1, 1962 thru May 12, 1963:

CHARITY FUND			
Balance in bank Oct. 1, 1962			\$103,535.51
Receipts:			
Payroll Deductions	\$317,595.65		
Interest	748.11		
Direct Contributions	146.52	318,490.28	
Total			\$422,025.79
Disbursements:			
Grants to Charities	\$284,147.84		
Auditor's Report	325.00	284,472.84	
Balance in bank May 12, 1963			\$137,552.95
Reserves:			
Savings Accounts		25,000.00	
Available for Charity May 12, 1963			\$162,552.95
EMERGENCY AID FUND			
Balance in bank Oct. 1, 1962			\$ 8,938.69
Receipts:			
Payroll Deductions	\$ 35,288.30		
Interest	83.14		
Direct Contributions	16.28	\$ 35,387.72	
Total			\$ 44,326.41
Disbursements:			
Grants to 198 cases	\$ 33,472.20		
Printing of checks	7.19	33,479.39	
Available for Emergency Aid May 12, 1963			\$ 10,847.02





**NEW CONCEPT**—GD/Convair-developed process for fabricating all-fiber glass leading edges with integral heating elements for C-141 horizontal stabilizers includes production stages shown above: (1) Herta Teich welding nickel tabs on thin metal strips used as heating elements, and Howard Stanley bending up tabs. (2) R.

E. Thompson marks center line on fiber glass tool for positioning of elements during laminating. (3) Mary Frescas and Jim Finleon cut fiber glass cloth to shape for build-up. (4) Les Boring, plastics assistant foreman, and Harry Rote, Dept. 129 foreman, check dimensions of heating element embedded in leading edge.

## F-111 Cooling Units Ordered

A contract to develop and manufacture refrigeration units and temperature-control sets for the F-111 jet fighter has been awarded Garrett-Airesearch, Los Angeles, by GD/Fort Worth. The contract is in excess of \$1 million.

(The contract is with Airesearch Manufacturing Co., a division of the Garrett Corp., both of Los Angeles.)

The contract calls for systems to be built for 23 aircraft and test packages for both the F-111A (Air Force) and the F-111B (Navy).

The airesearch system is a simple, air-cycle system which cools hot, pressurized air bled from the aircraft's two jet engines.

★ ★ ★

## RADAR ALTIMETER CONTRACT PLACED

Minneapolis-Honeywell's Aeronautical Division has been awarded an \$885,000 subcontract by GD/Fort Worth to design and produce low-altitude radar altimeters for the flight-test phase of the F-111.

Honeywell said the F-111 radar altimeter will be similar in design to a family of high-accuracy altimeters developed at the company's Seattle Development Laboratory and successfully flight-tested in a variety of aircraft.

A unique feature of the Honeywell altimeter, the company said, is leading edge tracking which eliminates doppler effect errors and signal averaging and permits accurate operation over ice and snow.

## TITAN CONSIDERED TO BOOST CENTAUR

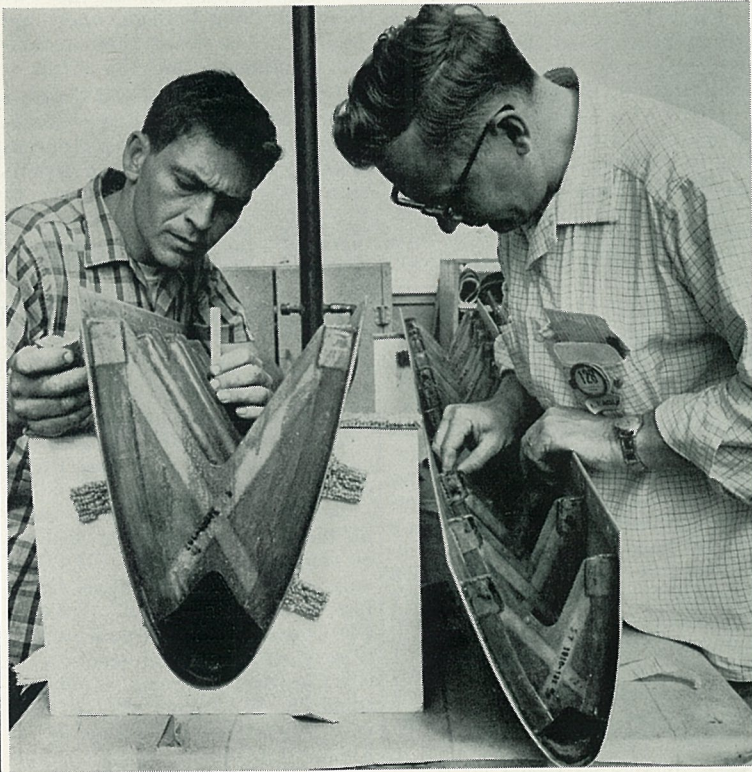
National Aeronautics and Space Administration's Lewis Research Center has issued a \$325,000 study contract to Martin Company to determine if the Titan II can be adapted as a booster for the Centaur space vehicle.

Centaur is built by General Dynamics/Astronautics and is the nation's first high-energy rocket powered by engines burning liquid hydrogen and liquid oxygen.

Utilizing an Atlas first stage, Centaur is now destined to soft-land Surveyor spacecraft on the moon to conduct preliminary studies leading to manned lunar landings later during this decade. Research and development flights with this combination are slated for this year from Cape Canaveral.

Titan II, developing about 430,000 pounds of thrust in its first stage, will launch two-man Gemini spacecraft into earth orbit for periods of up to two weeks. NASA indicates a significant increase in payload capability could be achieved in a Titan II-Centaur combination.

Martin will submit preliminary design analysis; mission performance analysis; requirements for ground support equipment and launch facilities; and development plans including scheduling and funding as part of the study.



**STRONG STRUCTURE**—Charles Kahler and Hank Fenstermacher, both GD/Convair Dept. 128, clean terminals and metal clips inside completed fiber glass leading edge section before installation of electrical harnesses. Plainly visible is internal rib structure.

## Lifelike Landing View Features F-111 Mockup

What will a carrier deck look like from the cockpit of a Navy version F-111?

Engineering illustrators at GD/Fort Worth are helping to answer the question with scaled schematic drawings of a carrier. The drawings represent the "landing field" a pilot will see from 150, 300 and 450 feet away.

Actually, the viewer will see these displays from the cockpit mockup. It's all part of a cockpit development engineering inspection slated for the near future at GD/Fort Worth.

Similar inspections will be made

on Air Force F-111 cockpit mockups, using pictures of landing fields.

"Three different displays were made to reveal what the pilot can expect to see from various distances and attitudes," said A. J. Duban, assistant project engineer F-111 mockup.

A formal mockup inspection will follow later this year, Duban said.

Engineering illustrators who painted the large drawings are W. E. McDaniel, R. M. Benson Jr., J. J. Pickle and J. W. Gilbert, all of Dept. 268-4.

## Industry 'First' Scored By Glass Leading Edge With Integral Heating

Horizontal stabilizers for the Air Force C-141 jet cargo transport will be equipped with de-icing leading edges made completely of fiber glass, with integral heating elements, developed at General Dynamics/Convair as a first for the industry.

The new-type leading edges, entirely of fiber glass—including internal rib supports—together with the novel heating elements of thin metal strips, save approximately 100 vital pounds of weight in each empennage.

The fiber glass structure has proved strong and flexible with all the rigidity and stiffness of metal or metal and fiber glass combinations, such as are used on the 880/990 jet transports. Under fire from 1-in. hailstones shot at 460 knots, the fiber glass leading edges didn't show that they had ever been struck!

GD/Convair engineers hit upon the idea of using expanded metal for heating elements as they sought for a lightweight and fail-safe anti-icing system for the advanced type of high-performance craft.

They found that thin strips of metal of inconel and nickel buried within the fiber glass would give controlled resistance and an elasticity far beyond the flexibility of the leading edge—expanding and contracting like rubber bands.

According to Jess Spencer, GD/Convair engineer assigned to design duties under R. W. Miller, C-141 project engineer, the expanded metal never had been used before for such an application. The material is commonly

Do today what a year from now you will wish you had done. Sign up for U.S. Savings Bonds purchase through payroll deduction.

seen as protective covering for such delicate items as resistors or as ornamental grillwork.

Spencer and Gene Catton, manufacturing development engineer, experimented with several types of metal, wire, etched foil before they found the combination which best served the purpose.

The perforated and expanded metal has proved far superior to conventional elements, such as series of small wires or printed circuits. It is not only much lighter, where weight is a critical consideration, but it allows high heat uniformity. Breaks in the tiny strands conducting the current cause little, if any, change in the resistance and they can be easily repaired with new pieces bonded in with conductive epoxy at any place where a short might occur.

The metal comes to GD/Convair from the vendor in flat sheets conforming to GD/Convair specifications. It starts out as solid metal pieces, 5 inches long, and ends up in 40-inch strips after being pierced and expanded when rolled flat under pressure.

In GD/Convair's production area in Bldg. 3, nickel tabs are welded to each end of the strips for uniform distribution of the current. Then the strips are molded right into the fiber glass as the 75-in.-long leading edge sections are laid up. Three strips are wrapped around the edge to give 11 inches of heated surface. Two heating pads go into each of the 8 sections making up the entire leading edge for a C-141 horizontal stabilizer. Power is cycled through the sections alternately from outboard to inboard with the 16 individual areas heated alternately.

Production methods of the fiber glass leading edges and the laminating process for molding the heating elements under the surfaces were worked out in GD/Convair plastics (Dept. 128) under supervision of H. G. Rote, foreman of plastics, trim, and metalbond, and L. F. Boring, plastics assistant foreman.

## GD/FW Son Selected For AF Institute

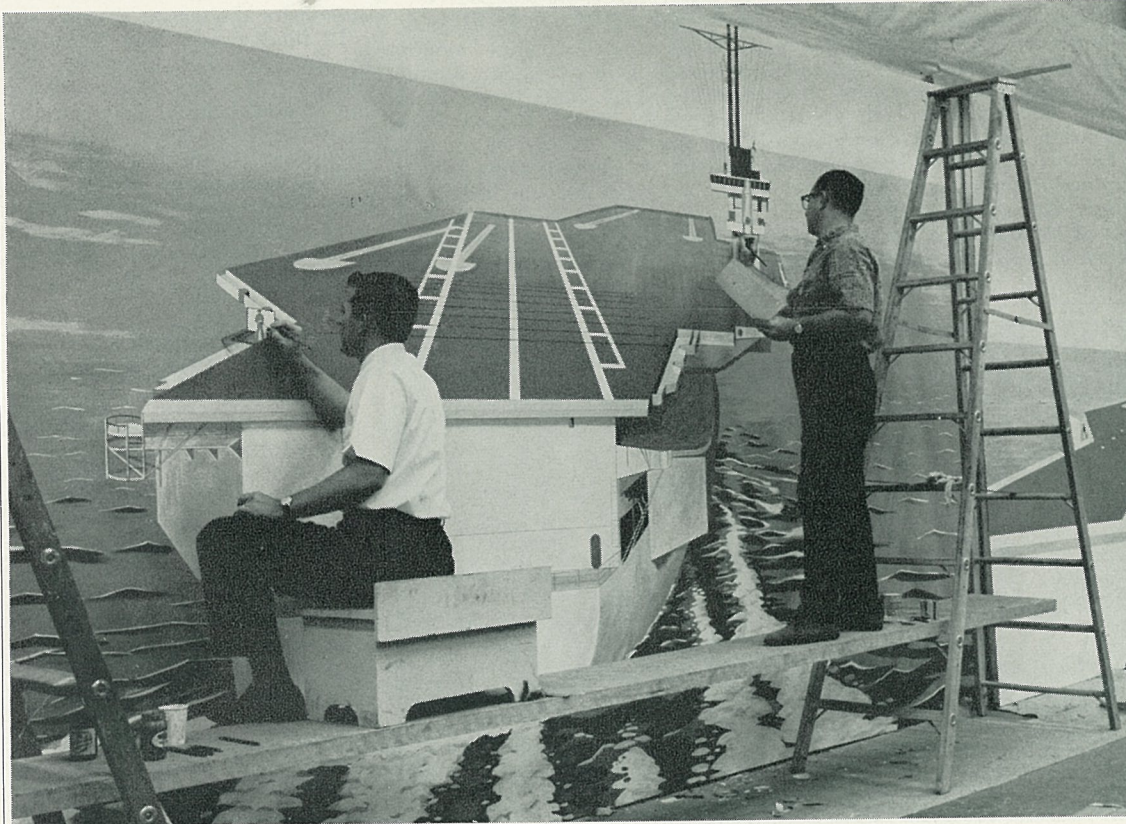
William E. Mercer III, son of W. E. Mercer, Dept. 8, has been selected for a graduate engineering space physics course at Air Force Institute of Technology in Ohio.

He was selected for the Institute, an accredited college, on the basis of academic standing in his field and in air science courses, and will receive a master's degree upon finishing.

Mercer graduated in June from Texas U., where he majored in engineering physics.

## NICHOLAS PAPER READ AT PACKAGING MEET

Harold B. Nicholas, senior design engineer at General Dynamics/Astronautics, presented a paper, "Component Mounting for Environmental Protection," during the National Electronic Packaging and Production Conference held June 4-6 in New York.



**ON THE DECK**—Artist's conception of aircraft carrier flight deck will present pilot's view (from mockup) during landing. GD/Fort Worth engineering illustrators, from left, are: W. E. McDaniel, R. M. Benson Jr.



## Two Spanish Courses Begin For General Dynamics 'Students'

Two new Spanish courses will start next week for General Dynamics people under CRA-ARA sponsorship.

Beginning class will meet Monday evenings from 7-9 in the executive dining room of Convair cafeteria on Pacific Hwy. with first class June 17. An intermediate Spanish course will be taught Tuesdays, 7-9, in the main dining room. Opening session is June 18.

Jim Hardison of GD/Convair Dept. 15, instructor of CRA-ARA Spanish courses for several years, said the "quickie" 8-week courses will be especially valuable for GD people planning to join the tour to Mexico this summer.

However, they are open to all GD/Convair, GD/Astro, and GD/Electronics students who wish to learn basic fundamentals of the language or brush up.

## San Diego Children Seek Foster Homes

General Dynamics Corporation families in the San Diego area who have room in their homes and hearts for young children have been invited to contact San Diego County's Department of Public Welfare for information.

Miss Gladys Madoff, a child welfare worker in the foster home licensing section, said this week there is an urgent need for homes in which children may be placed. They may be for day care only, or on a semi-permanent basis.

Miss Madoff indicated a very special need exists for Negro families to accept children at this time.

She may be contacted at 234-8871, ext. 245, for details.

## Mgt. Bowlers End Season

Bowling activities of GD/Astro Management Club were concluded last month with a mixed doubles handicap tournament held at Mission Valley Bowlero.

Tony Genco and Jackie Burris received first-place trophies, while Audrey and T. L. Harris were in second, Peggy and M. G. Witkovic, third, Vince and Corine Cernuto, fourth, and Hank Edie and Jackie Chin, fifth.

Women's individual awards went to Barbara Schultz for high game (197), and Frances Brooks, high series (486), while men's individual winners were J. D. Wiley, high game (214) and Bill Hill, high series (562).

Trophies in Management Club league bowling were also presented to members of Orbiteers (Herb Rasp, Jim Rose, Frank VanDusen, Hank Eide, Bill Moon, and Mike Edwards, captain) who edged Dark Horses by one game on the final night of play.

Individual league trophies went to Forest Erwin for a 241 high scratch game; Gerry Ranney, 634 high scratch series; Dave Krause, 271 high handicap game; and Herb Thompson, 703, high handicap series.

Presentations were made by retiring President Ed Russell, and Ad Mosco, club sports director.

Registration will be taken at first sessions. Hardison may be contacted at his home phone, 276-5805, for further information.

## GD/Astro Hosts Parts Group

General Dynamics/Astronautics was host for the Space Parts Group committee meeting in May.

The group was recently designated an Industry Advisory Committee by Eugene M. Zuckert, Secretary of the Air Force. Major James R. Golden, Space Systems Division, is chairman.

Dr. Victor A. J. Van Lint, head of General Atomic's radiation effects group, was key speaker. Phil I. Harr, Astro director of reliability control, spoke as did John Philps, Astro parts analysis and application group of engineering. E. S. Winlund, manager of reliability control engineering at Astro, delivered the welcome address.

W. G. Bjornson represents Astro on the group which includes key representatives from industry, military and government agencies.

## ARA Riders Slate June 15 Festivities

ARA Riding Club will hold a hayride, barbecue and dance to acquaint all interested GD/Astro employees with its activities, 6:30 to 11 p.m., June 15 in the ARA area.

Cost is \$1.25 per person, with additional refreshments available. Reservations may be made with Mrs. Joe Pena, 277-6429, through June 14.

Riding Club has also arranged for riding instruction at discount rates for employees. First class will convene at Bonita Valley Farms, 10:30 a.m., June 23.

Cost of the eight-lesson series is \$15, with applications available at employee services office, Bldg. 8.

## SUMMER SESSION STUDENTS ENROLL

General Dynamics people may enroll now for most summer school sessions offered at San Diego area colleges and universities.

Registration for San Diego junior colleges will be during the week of June 24 at the admissions center, 835 12th St. The 8-week session begins July 1 and ends Aug. 23.

Information on courses offered by California Western University is available through the Director of the Summer Session at the university's campus, 3902 Lomaland Drive. GD men and women interested in University of California Extension courses may phone 232-7321 or call at the extension office, 1221 Fourth Ave.

Details on summer sessions, day and evening programs, at San Diego State College may be obtained through the Summer Sessions Office, phone 582-4411, ext. 471.

## Four Complete On-Job Training In Ind. Mgmt.

Four General Dynamics/Astronautics men have been honored by President J. R. Dempsey on completion of a two-year on-the-job training program in industrial management.

They are Russell N. Babcock, Gene G. Carpenter, Frank R. Lucas and Peter M. P. Norris.

Through the two-year program they worked in material department functions learning procurement, cost and administration, subcontract management, material contracts and operations and vendor research-value analysis.

First "graduates" of a program established by Frank J. Traversi, now vice president-administration, the group are fore-runners of a broadened program which now lists 14 trainees working in various administration departments (material, contracts, communication, industrial relations, management systems, management audit, and value control).

## Apprentices Plan 'Alumni' Reunion

Graduate apprentices at all General Dynamics Corporation facilities in California are being invited to a special "alumni" get-together June 30 at GD/Convair's Pecan Park.

Families will bring their own food. Soft drinks and beer may be purchased at the park and barbecue units will be available for cooking. Games, contests and prizes are all on the agenda with the program opening at 11 a.m.

Pecan Park is located seven miles east of El Cajon on Highway 80.

Further information is available through J. G. Sewell, ext. 2567, Plant 71, or L. W. Turner, ext. 491, Plant 1.

## Astro Women Join In Delta Activity

Several GD/Astro women participate in activities of Delta Toastmistress Club, meeting regularly at 7:30 p.m., second and fourth Tuesdays of each month in GD/Convair executive dining room.

President of the group is Pam Gray, whose husband, W. A. Gray is in Dept. 781, and Marge West, Dept. 156, is vice president and program chairman.

At a recent "pink and silver" membership tea at Kings Inn, Sunny Dark of GD/Astro AF-PRO, conducted induction ceremonies for new members.

## Camera Enthusiasts To See Special Film

Astro and Convair camera clubs will hold a regular Sunday meeting, 7:30 p.m., June 16 in Photo Arts Bldg., Balboa Park.

A special movie of a trip through Baja California to La Paz, provided for the group by Lute Mason of a local savings institution, will be shown. Members will also view photos made at last month's Photorama.

## Fifteen GD Apprentices Honored At Annual Completion Ceremony

Fifteen General Dynamics apprentices were among more than 200 San Diego men honored at the 22nd annual Apprenticeship Completion Ceremony May 23, marking culmination of apprenticeship training.

The dinner and ceremony in El Cortez Hotel were held under the joint sponsorship of the San Diego General Apprenticeship Committee and the 27 individual trade committees, assisted by the California Division of Apprenticeship Standards, the San Diego City Schools, and the Federal Bureau of Apprenticeship and Training.

The student body of the San Diego Evening College, where apprentices completed their technical training, hosted the affair.

H. W. Rubottom of GD/Convair educational services, and commissioner of the California Apprenticeship Council, presented certificates of meritorious service to

members of the Joint Apprenticeship Committee who had served over five years.

Besides receiving one himself for 15 years' service, Rubottom handed certificates to Jack Croft and Marty Stutz of GD/Astro for five years; A. B. Oberg of GD/Convair, 10 years.

Graduating apprentices from GD/Convair were: Lloyd T. McKinney, aircraft electricity; Stanford G. Anderson and Richard C. Singer, electronics; Francis L. Dohm, Robert G. Smith, John T. Willingham, tool and die making and jig building.

Those from GD/Astronautics were: Donald J. Lightfoot and T. S. Sisk, machinist; Richard A. Golem, Dennis R. Hoefs, Jeffrey D. Hughes, William E. Johnson, Walden R. Kellogg, Lawrence R. Lutzke, Richard G. Scharfenberg, tool and die making and jig building.

## Joint GD/Convair, SDJC Effort Produces Tech Writing Program

A new certificate program in technical writing is available to General Dynamics people through cooperation of GD/Convair educational services and San Diego Junior Colleges.

Serving on the advisory committee which established the requirements were five GD/Convair and GD/Astronautics training specialists—L. J. Solheid, GD/Convair technical publications supervisor; Louie Henderson of GD/Convair technical publications; L. W. Turner of GD/Convair educational services; C. J. Fisher, GD/Astro support publications supervisor; H. T. Sicard of GD/Astro educational services.

The program offers a comprehensive background in technical data to prepare students for professional employment in the area of technical communications and publications. It is organized on a progressive basis to lead the student from the general field of written communication to more

specific areas of logical technical descriptions.

Required courses for a certificate are English for Technical Writers, Introduction to Technical Writing, Intermediate Technical Writing, Technical Writing Workshop, Advanced Technical Writing. Elective courses, of which two are necessary, are Technical Proposal Writing, Technical Report Writing, Technical Specifications Writing, Fundamentals of Graphics.

Courses may be taken either in-plant or at any of the SD Junior Colleges. GD/Convair educational services already has included many of the courses in its supplementary in-plant curriculum, and this fall will schedule Technical Specifications Writing as an advanced course.

Information is available through the SD Junior Colleges' main office, 1425 Russ Blvd., or from Turner, ext. 491, GD/Convair.

## ASTRO, GASCO TIE IN VOLLEYBALL ROUND

Second round of IRC volleyball tourney wound up in a tie between Gasco and Dynamics, Astro team, in the American League with both holding 3-1 records.

If Gasco took the play-off last Wednesday, they would go into another match with Dynamics, first-half winner, for championship title.

Fire Dept. was undisputed winner of the National League at close of second round. It was to play Ryan, first round winner, June 5 for the league champ title.

In final games May 29 played by American League teams, Dynamics had a bye. Gasco downed the Untouchables from Astro, 15-10, 15-12; CSEA beat City Engineers, 15-18, 15-9.

National League scores were Fire Dept. over the Wreckers, 15-11, 13-15, 15-8. GD/E won on a forfeit by Hi-Lows. Miramar beat Ryan, 15-9, 15-12.

## Saturday Salvage Schedules Listed

Schedule for the next four Saturdays at GD/Convair and GD/Astro salvage yards is:

GD/Astro—June 15, 29.

GD/Convair—June 22, July 6.

## Paul Hooten Tallies Fifth Hole-in-One

It's "old hat" to Paul Hooten, GD/Astro Dept. 759.

His recent 145-yard hole-in-one at Carlton Oaks was his fifth!

Then Hooten, a member of ARA Golf Club, followed through on the same round by holing an 8-iron shot on the 16th hole for a second eagle.

Needless to say, Hooten is Carlton Oaks club champ.

## Mrs. Menzie Wins Top Fishing Award

May awards for CRA Fishing Club's monthly contest went to Ruth Menzie and Joe Sapko.

Mrs. Menzie, wife of Commissioner Bob Menzie, an expert angler in her own right, took top cash prize of \$10 for a 3-lb., 4-oz. large mouth bass caught at San Vincente.

Second prize of \$5 went to Sapko (retired from Dept. 25) for a yellowtail weighing 17 lbs.

Anglers at GD/Convair and GD/E are reminded that fishing catches must be entered at CRA office before the fifth of each month to be eligible for awards. Entry forms are available at employee services and should be picked up ahead of time and filled in at time fish are caught.

## Modelers Schedule Hand-Launch Meet

CRA Aeromodelers will compete in a hand-launched glider contest this Saturday (June 15) at the Clairemont Mesa Flying Site.

Flying hours are between 8 and 11 a.m., said Larry Peterson, Aeromodelers president.

Fathers and sons will be entered in senior and junior classes and prizes awarded in each division.

"This kind of a contest is easy to prepare for and lots of fun for all contestants," said Peterson, who urges all interested modelers to turn out.

All GD/Convair, GD/Astro, and GD/Electronics people and their children are eligible to compete.

A meeting will be held following the contest to plan future Aeromodelers activities.

For details call Peterson at ext. 1477, Plant 1.



LEAGUE CHAMPS—Orbiteers, winners of Management Club bowling league at GD/Astro are, from left, Herb Rasp, Frank VanDusen, Hank Eide, Bill Moon, Jim Rose and Captain Mike Edwards, pictured after receiving trophies from Ed Russell and Ab Mosco at right.



# Sports & Recreation

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

★ ★ ★

**ASTRO LENS** — Meeting 7:30 p.m., June 16, Photo Arts Bldg., Balboa Park. Movie; display of Photorama pictures.

**BRIDGE** — Regular play nights, Fridays, 7:30 p.m., ARA Clubhouse.

**CHORUS** — Rehearsals each Monday, 7:30 p.m. ARA Clubhouse.

**COINEERS** — Meeting 7:30 p.m., June 19, ARA Clubhouse. Evening will feature major silver coins.

**GOLF** — ARA Club tournament, Coronado, June 22, 23. Best nine and blind bogey meet. Starting times, ext. 1111, through June 19.

**RADIO CLUB** — Meeting 7:30 p.m., June 19, club station, ARA Clubhouse. Final planning for ARRL Field Day, June 22-23.

**RIDING CLUB** — Hayride, barbecue and dance, 6:30-11 p.m., June 15, Recreation Area. Cost \$1.25 per person. Reservations with Mrs. Joe Pena, 277-6429 through June 14. Applications for riding lessons available at employee services, Bldg. 8.

**ROCKHOUNDS** — Meeting 7:30 p.m., June 12, ARA Clubhouse. Installation of officers.

**SKIN DIVING** — Meeting 7:30 p.m., June 12 ARA Clubhouse. Speaker, Keith Pope.

**SOFTBALL** — Representative team plays home games each Friday, 8 p.m., ARA diamond.

**TENNIS** — Meeting 7:30 p.m., June 25, ARA Clubhouse. Speaker, Dick Bradlee, author of "Instant Tennis."

**TEEN CLUB** — Dance 7:30-11 p.m., June 15, ARA Clubhouse. "Chancellors" band. Admission

25 cents per person. One guest per member. Sport clothes appropriate.

**TRAILERS** — Outing June 15, 16, Banner Campground. Details from Virg Marshall, ext. 3542.

**WATER SKIING** — Skiing every Saturday, Sunday, 10 a.m.-4 p.m., Crown Point, Mission Bay.

## Aqua Parade Honors Won

Following up its initial sweepstakes-winning effort at float building for North Park's Mother Goose Parade last year, ARA collected the Governor's trophy at the recent Pacific Beach Aqua Fair Parade.

C. M. "Chuck" Ogle, Dept. 290, who "fathered" the North Park entry, again master-minded the Aqua Fair entry, with an assist from ARA Commissioner Bill Johnson, Miss ARA and her court.

Johnson's Water Ski Club provided their 16-foot outboard motorboat and trailer, adding a paper-and-cellophane "water" base.

This served as a perch for Darlene Elson, ARA queen, and attendants Elaine Carter, Eleanor Boisselle and Sharon Mateja (filling in for her sister, Virginia).

Boat and passengers were towed by a multi-colored "fish" which disguised a small tractor.

The fish was a wood and paper fantasy created by Ogle and his two young neighbors, Del and John Creighton.

Also earning trophies were Astro Junior Riders.

## ARA's Bridge Club Reports Winners

Tony and Jo Miller were north-south winners, Section A, during ARA Bridge Club play May 31, while Bob and Eleanor Combs won east-west.

Section B winners were Don and Sandra Knolls (north-south) and Gordon and Sonja Blade (east-west).

At a session May 24, Mitzi Rustad and H. R. McCullough teamed for north-south honors in Section A, while Paul and Katherine Lewis won east-west. In Section B, Mary Max Hoffman and Eve Leasure won north-south and Charles Myrose and Bill Bellamy, east-west.

## Trailers Will Roll To Banner Campground

Banner Campground on Highway 78 has been selected as site of an ARA Trailer Club outing June 15 and 16.

At the group's business meeting last week, Jim Shinn entertained with movies of previous club outings. Additional information on Trailer Club is available from Ray Parga, ARA commissioner, ext. 3805, or Virg Marshall, president, ext. 3542.

## 'Instant Tennis' Talk Scheduled For ARA Club

Trophies to winners and runners-up in its spring tournament will be presented at an organizational meeting of ARA Tennis Club, 7:30 p.m., June 25 in ARA Clubhouse.

As added incentive for employees and members of their families new to the sport, Dick Bradlee, author of "Instant Tennis" will describe his revolutionary approach to the game.

Weekend showers prevented completion of the tournament, although some events had been played by presstime.

Betty Johnson, daughter of J. L. Johnson, Dept. 967, won the women's singles round-robin match, with Rae Cannau, daughter of John Cannau, Dept. 966-4, finishing second.

In men's doubles, Bill Wright, Dept. 210, and ARA Commissioner Ben Cendali, Dept. 578, bested John Cannau and Marsh Agra, Dept. 032-4 in the finals.

On June 9, Cannau was to play L. A. Chambers, Dept. 110, for the men's singles championship, while Betty (Mrs. C. E.) Shuler and Cendali were to meet the winners of a Betty Johnson-Bill McHorney vs. Rae Cannau-John Cannau mixed doubles match to be played June 8.

## 'Carousel' Tickets Offered at Discount

A limited number of reduced price tickets for the matinee performance of "Carousel" at Circle Arts Theatre, Sunday, June 16, are now available to GD/Astro employees.

Tickets in three price ranges are now on sale at 30 per cent discount through the employee services office, Bldg. 8, during regular sales hours. Employees may purchase them for \$3.15, \$2.60, \$2.10.

## Bus Excursion To Game Set

It will be Angels and Yankees in action at Dodger Stadium July 12 when Astronautics Recreation Association conducts a group excursion.

Reservations will be accepted (with payment of fees) beginning tomorrow (June 13) and continuing until the 200 available seats are sold. Call at employee services office, Bldg. 8, Plant 71.

Total cost per person is \$6 and includes round-trip bus transportation, a box lunch (fish or chicken) with soft drink or coffee, and a reserved seat at Dodger Stadium.

Buses will depart Astro's Bldg. 2 from 4:30 until 5 p.m., going direct to the stadium.

## Auction Scheduled By Stamp Collectors

The meeting of ARA Stamp Club, 7:30 p.m., tomorrow (June 13) in ARA Clubhouse, will feature an auction with members submitting 100 lots.

At a June 20 meet, a trading session is planned, and a prize will be awarded for the best exhibit. Jerry Kowalski took May exhibit honors with a display of world-wide new issues.

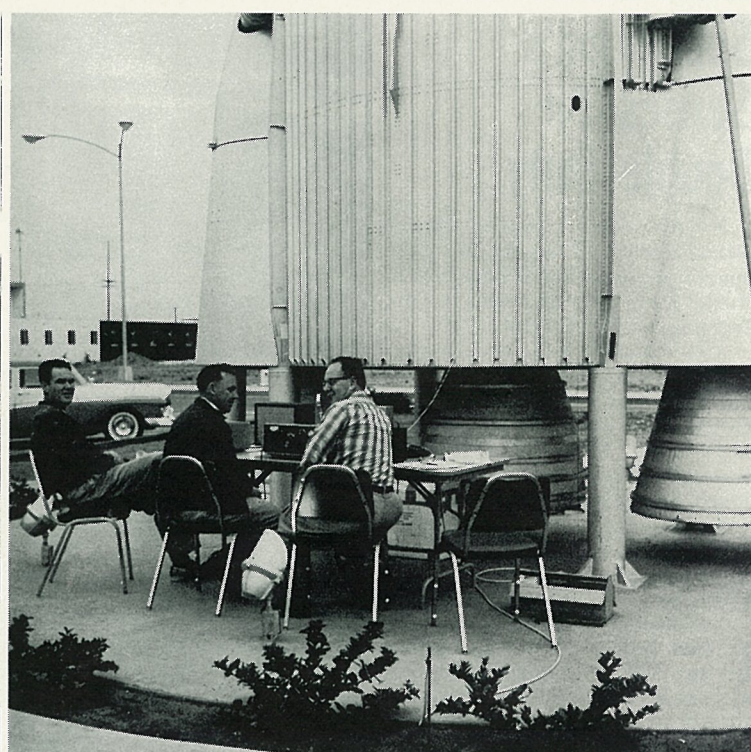
Members contributing to a club exhibit for San Diego County Fair have been asked to bring these items to the June 13 meeting.

## Wives Luncheon Set For Diamond Jim's

Monthly luncheon meeting of Astro Wives' Club will be held June 19 at Diamond Jim's, La Mesa.

A social hour will open at 11:30 a.m., with luncheon at 12:30. All wives of GD/Astro employees have been invited to attend.

Hope Martin, 466-5701, or Helen Johnston, 277-2308, may be contacted for details and reservations.



ON THE AIR—ARA Radio Club demonstrated "can do" last month, hooking radio to Atlas missile display in ARA area for use as "antenna." "Red" Jenkins, Al Rich and Reed Evans are shown here. They contacted stations as distant as Alaska.

## Radio Club to Compete In National Field Day

Final planning for club participation in the annual National Amateur Radio Field Day will be main topic at the meeting of ARA Radio Club, 7:30 p.m., June 19 in ARA Clubhouse.

This year the clubhouse station will be the group's main base of operations for Field Day (June 22, 23), although equipment will be operated from emergency power supplies.

Purpose is to test amateur operators' skills under emergency conditions, with awards going to groups making contact with the most stations in a 24-hour period.

Don Jenkins is new club president, John Hammond is vice president, Jim Denny, secretary-treasurer; Al Rich, station engineer; and Frank Kemper, trustee.

Reed Evans is club representative on San Diego Radio Council, and Ed Carson is ARA commissioner.

## BASEBALL TEAM TO OPEN SEASON

ARA's representative baseball team opens regular season play Sunday (June 16) after ending an eight-game exhibition league round with six wins, two losses.

A 10-3 loss to a Ryan team was compensated when the Astro nine downed Cal Western 3 to 1.

In the final exhibition, Astro bested New Linen Supply, 4-3, with two singles, a double and a triple by Bill Murphy, Hilbert Murillo and Garfield Winters.

## Summer Program For Children Near

GD/Astro youngsters, 8 to 13 years of age, have again been invited to take part in San Diego City-County Camp Commission's summer program at Camp Cuyamaca.

Brochures describing the five-day sessions, held July 8 through Aug. 16, are now available at the employee services office, Bldg. 8.

The club attracted considerable local attention last month when it set up single side-band equipment under the display missile in ARA Recreation Area, using the Atlas as antenna.

Operating on the 14-15 meter bands with equipment provided by Western Radio and TV Supply Co., the group was in contact with stations throughout the U. S. and as distant as Alaska.

Licensed amateurs and GD/Astro employees interested in acquiring amateur radio "tickets" may contact Denny, ext. 2275.

## TUTTLE TO PRESENT FREE SLIDE SHOW

A free slide program of interest to GD/Astro employees and their families will be presented in ARA Clubhouse auditorium, June 26 at 8 p.m.

"Five Nights Out with a Flowery Finish" was prepared by GD/Astro's Larry Tuttle who will narrate the program. The show features color slides made on five back-pack trips, including visits to Mt. San Jacinto, San Geronio, and Telescope Peak near Death Valley.

The show concludes with slides of Texas and California wild flowers.

Free tickets will be available at employee services outlets starting June 19. Astro Lens, ARA camera club, hosts the show.

## Archery Club Holds Matches Each Week

ARA Archery Club, inactive for some time, has been reorganized and now meets weekly.

First shoot was held May 23 on ARA's lighted softball diamond, and subsequent events are scheduled each Thursday at 7:30 p.m.

ARA Commissioner A. D. Stone has invited participation of all interested GD/Astro employees and members of their families.

## Astro Women To Take Office

GD/Astronautics women will be among new officers installed by Serra Mesa Toastmistress Club during ceremonies June 15 at Islandia Hotel, Mission Bay.

Helen Husseman, Dept. 193-1, is new president, Clella D. Stivers of GD/Astro Air Force Audit, vice president, Joanne Lee, Dept. 032-2, secretary, and Carolyn Buman, Dept. 541, treasurer.

Installing officers will be Clarence Heise, president of La Jolla Toastmasters, and Sunny Dark, Astro AFFRO, chairman of Toastmistress Council 7, will share the speaker's platform with L. R. Zemlin, Astro Dept. 010-2, and president of the La Jolla men's group.

Serra Mesa Toastmistresses also plan a tea, 1:30 p.m., June 23 in ARA Clubhouse to introduce their organization to prospective members. Reservations for both events may be made with Helen Husseman, ext. 2316, or "Dee" Stivers, ext. 727.



CHEERS — Proposing coffee "toast" upon recent election as officers of Serra Mesa Toastmistress Club are Clella D. Stivers, left, of GD/Astro Air Force Audit, vice president; Carolyn Buman, Dept. 541-0, treasurer; Joanne Lee, Dept. 032-2, secretary; and Helen Husseman, Dept. 193-1, president.



TWICE WINNERS—Members of GD/Astro championship plant basketball team received individual and team trophies from supervision at recent banquet. From left are Manny Gomes, captain, Gary Caito, team member, W. D. Johnson, R. D. Raines, A. J. Halyburton and B. J. Yoakum who presented awards, and players H. Johnson, "Whitey" James and Earl Hunt. This is team's second consecutive year as plant champs.



## Spaceman's Senses Do Double Duty

Manned orbital flights aboard Atlas-boosted Project Mercury spacecraft show astronauts "over-work" their eyes and ears in performing assigned tasks.

Now General Dynamics/Astronautics scientists are working out a system whereby future astronauts on extended space journeys can "see" and "hear" through other senses, such as touch and smell.

For instance, electromagnetic stimulators could be placed on various parts of an astronaut's body where coded information pulses would be felt. They could be tied into critical information devices such as the oxygen supply system. If this required attention, the control system would send an impulse to the stimulator on the astronaut's body. Thus, his eyes and ears would be free for other flight-related tasks.

Nontoxic gas with a distinctive odor could be used to translate a specific signal, such as "watch your humidity gauge." Unless the odor was present, the astronaut could ignore this gauge as functioning properly.

Studies of this type are being made by Astro's life science laboratory. They are being performed in the long-established, company-sponsored Manned Space Station Simulator (MSSS) program. Scientists and engineers serve as test subjects, often remaining "sealed" for days in the MSSS on simulated space flights.

Dr. John M. Coyne, an aerospace psychologist, recently presented a paper on the use of the senses of touch and smell as "information channels."

He pointed out space stations and space vehicles are to become more complex and astronauts required to perform so many tasks that it will become necessary to:

1. Add an additional astronaut and life support equipment with resultant loss of payload, or
2. Expand the capability of the astronaut to receive and utilize information by some means other than his overloaded auditory and visual senses.

Dr. Coyne indicated Astronautics' tests show the use of touch and smell for this purpose is promising.

"Skin-sensation stimulators would permit the astronaut to sleep until his attention was needed, then 'tap him on the shoulder' to awaken him," Dr. Coyne said.

## Purchasing Agents Hear 'Smoky' Doyle

C. W. "Smoky" Doyle, procurement value control administrator F-111 material program at GD/FW, was to appear on the program of the International-National Association of Purchasing Agents at Atlantic City June 2-5.



**BIG ONE**—Three-story tall nose fairing for GD/Astronautics' Orbiting Astronomical Observatory is inspected before delivery by A. P. Turner, left, and C. F. Fitzjarrald at GD/FW.

## Nose Cone Three Stories Tall Built at GD/FW for Space Job

An all-fiber glass, honeycomb nose fairing for an Orbiting Astronomical Observatory (OAO) was completed at GD/Fort Worth recently for GD/Astronautics.

The giant fairing—believed to be the largest of its type ever assembled—will be used to carry a Grumman satellite payload aloft on an Atlas-Agena-B booster. Ultimately, it will be used on the Atlas-Centaur vehicle.

Spokesmen described the fairing as the "first of several" expected to be made for GD/Astronautics Division.

Three-stories tall (28 ft.), and 10 ft. in diameter, the nose cone is designed to protect the payload during ascent.

It will be jettisoned outside the atmosphere, permitting the payload to make telescopic stellar observations and to report digital data and television signals.

"Since the OAO must be sterilized and remain germ-free throughout launch, the nose fairing is designed to maintain the necessary microbe-free environment," said W. A. Bratton, engineer in charge of the project.

A special seal much like the one used on a refrigerator door is used to help achieve this ultra-clean effect.

"Check of the seal is done by pressurizing the assembled halves for long periods of time to assure

all leaks are detected and eliminated," Bratton pointed out.

Fabrication was done by Dept. 35, with assembly work in Dept. 41. Bratton cited outstanding service performed by a number of employees, including E. C. Constantino, W. F. Sutton, A. P. Turner, R. E. Atnip, C. F. Fitzjarrald and W. W. Segars.

GD/Fort Worth has previously manufactured nose fairings for Centaur and Surveyor space vehicles.

## Conference to Hear Dynamics Executives

James R. Dempsey, president of GD/Astronautics, and Dr. Frederic de Hoffmann, president of GD/General Atomic, will take part in the conference on "California and the Challenge of Growth: The Impact of Science" this week (June 13-14) at the University of California's San Diego campus.

Dempsey will be a member of the panel discussing effect of science on industry while Dr. de Hoffmann will speak on "Atomic Energy—the Interrelation between Economics and Natural Resources."

## Dr. Secrest Conducts Physics For Layman

Dr. E. L. Secrest, GD/Fort Worth chief scientist, will be co-lecturer of an experimental study-discussion course on physics for the layman which began June 10 and will continue at 7:45 p.m. each Monday through August 19 at Fort Worth Public Library.

Entitled "The Mystery of Matter," the course is the second unit of the Citizen and the New Age of Science Series developed by American Foundation for Continuing Education under a grant from National Science Foundation.

Before joining GD/Fort Worth, Dr. Secrest was an associate professor of physics at North Texas State University. He holds BS and MS degrees from North Texas, and a PhD from Massachusetts Institute of Technology.

## NEVITT TO SPEAK ON SPACE AGE

C. E. Nevitt Sr., Dept. 3-3, GD/FW, will speak on "Preparation for the Space Age" June 25 before the Rocketdyne Management Club at Ridgwood Country Club in Waco, Texas.

## Atlas/Centaur/Surveyor to 'Fly' To Moon in New Astro Test Stand

Plans for a \$6.8 million Combined Systems Test Stand (CSTS) in which Atlas/Centaur/Surveyor flight vehicles will rehearse moon-probing missions have been announced.

National Aeronautics and Space Administration (NASA) will build the facility on a 3½-acre plot adjacent to General Dynamics/Astronautics' Plant 71, probably near the southeast corner of the present reservation.

Design work for the CSTS is progressing with construction to start in the fall.

About 140 Astronautics employees, primarily from Centaur test operations under Manager J. S. Harrison, will man the facility for NASA. In addition, personnel from Hughes Aircraft and Jet Propulsion Laboratory along with NASA personnel will be on hand. Hughes builds the Surveyor spacecraft for NASA under direction of Jet Propulsion Laboratory.

Astro plans to have Centaur team personnel from Cape Canaveral participate.

Surveyor is an instrument-packed vehicle slated to probe the moon's surface to gain data prior to manned lunar excursions. Atlas is the first stage launch vehicle, Centaur the second stage.

Grant L. Hansen, vice president and program director—Centaur has indicated the CSTS facility will enable Astro to deliver to launch pads a totally-tested,

flight-ready space system, insuring the vehicle is ready at flight time and reducing testing at the launch site.

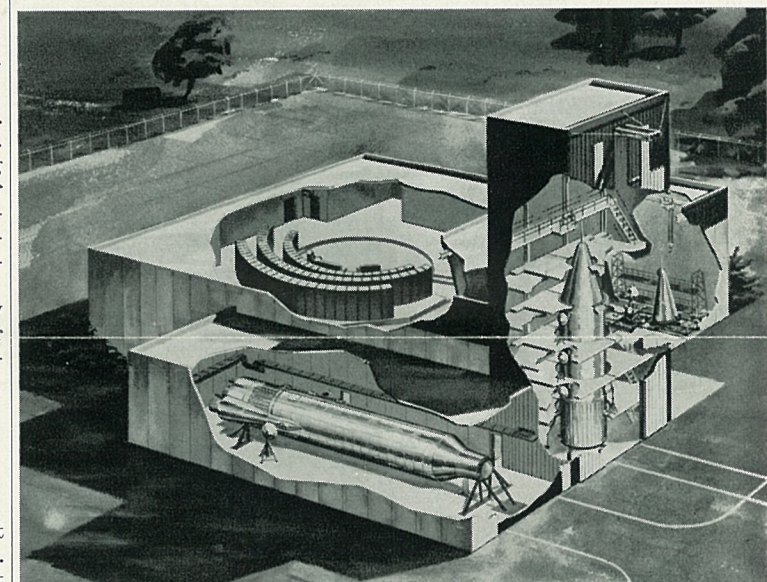
The 22,000-sq.-ft. facility will have the Atlas located in a horizontal position. Centaur and its joined Surveyor spacecraft will stand vertically. All three will be mated electrically and will function as if actually united.

During tests this combination will perform the majority of flight operations, except actual engine ignition, just as they will during an actual prelaunch countdown and flight.

"As far as the vehicles are concerned, they will be operating on an actual flight to the moon," Hansen said. "Guidance will maintain course, autopilot will direct required flight sequences, telemetry will broadcast vehicle performance data, and engines of both Atlas and Centaur will gimbal as if maintaining attitude and course control."

Ground support equipment used in CSTS will closely duplicate equipment in the actual complex, with the control center identical in appearance and equipment to the blockhouse at Complex 36, Cape Canaveral.

At present Astro is preparing an interim combined systems test facility to check out the Atlas/Centaur vehicle without Surveyor. It will serve until the new stand is ready for use.



**REHEARSAL**—Atlas/Centaur/Surveyor, in artist's conception, rehearses lunar mission in flight simulation facility soon to be built at GD/Astronautics. It will accommodate all stages of moon-bound vehicle for unified ground testing.

## Role of Value Engineering in F-111 Emphasized as 22nd Seminar Starts

W. C. Dietz kicked off the 22nd Value Engineering seminar at GD/Fort Worth June 10 by stressing the important role the value control approach will play in building the F-111.

Classes will be held for about 45 employees in Room 113-4C through June 21.

Dietz, chief engineer of the

F-111, explained that the value engineering approach can play a vital role in eliminating unnecessary cost on the program.

Attending the seminar are individuals from engineering research and development, F-111 and B-58 engineering, fabrication, and tooling departments, plus others from indirect departments.



**IN FOCUS**—GD/Astronautics' Virginia Mateja models for cluster of avid camera fans on set prepared by ARA-CRA lensmen.

—Photo by Joe Kayda, Astro Lens



**C-141 BRIEFING**—Col. Charles W. Atterholt (USAF), chief, San Diego headquarters, SD Contract Management District, is conducted on recent tour of C-141 empennage production area at GD/Convair by J. M. Adamson, C-141 program manager (far right). At left are C. R. Hampton, AF industrial specialist, and D. H. Digges, GD/Convair director of contracts.



# GD/Astronautics to Open Doors ~~Sunday~~ July 13 For Families, Guests

All departments are working toward displays of their activities to be exhibited during General Dynamics/Astronautics public open house, ~~Monday~~ July 13, when employees, their families and guests will get a close up look at the pioneering space-

age facilities and its products from 9 a.m. until 5 p.m. "This open house is planned as a salute to the Air Force, NASA and the thousands of GD/Astro employees working as a team in the nation's space program," said President J. R. Dempsey.

Although no cameras, firearms or radios will be permitted, GD/Astro facilities at Plant 71, Plant 19 and the materials building (92) will be opened to visitors with few or no restrictions. Of special interest will be: Tours of production areas

where Atlas and Centaur vehicles are built, and the facilities where space-age electronic devices are fabricated. Air Force display of missile might, featuring engineering models of Atlas, Minuteman and Titan ICBMs.

An opportunity to meet the new astronaut trainees from Edwards AFB. Special ceremonies at 1 p.m. Installation — outside the main lobby — of a "space-time capsule" containing predictions (Continued on Page 2)

## GD

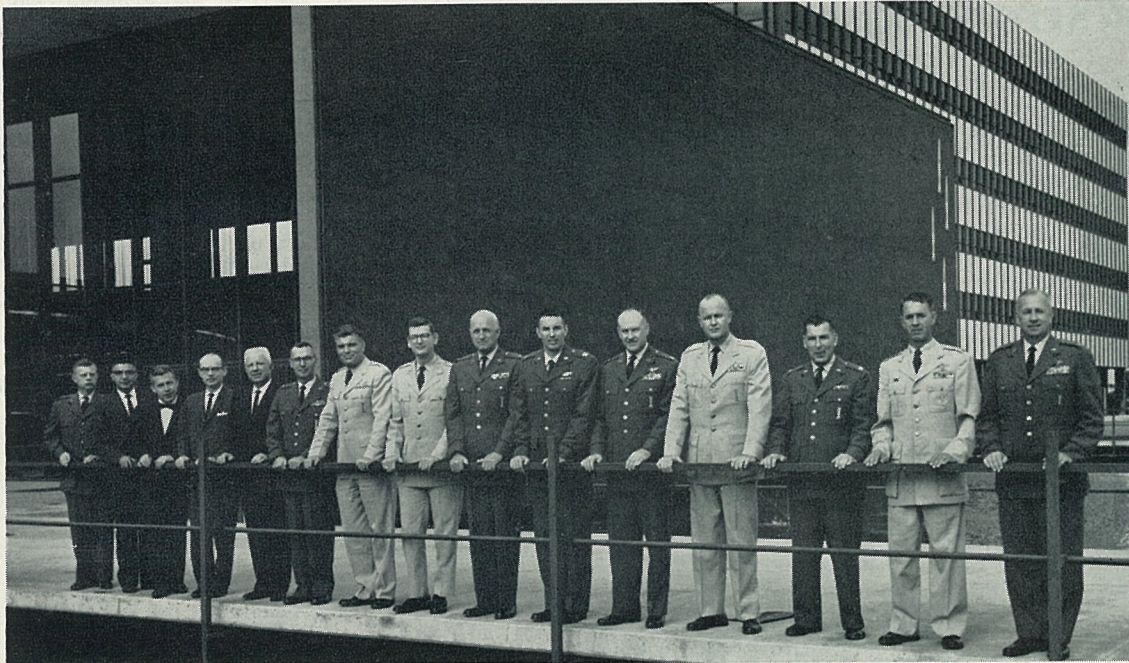
ASTRONAUTICS EDITION

# GENERAL DYNAMICS NEWS

Vol. 16, No. 13

PUBLISHED BY GENERAL DYNAMICS CORPORATION

Wednesday, June 26, 1963



**AFPR STAFF**—Key men of GD/Astronautics AFPR office are shown, reading from right to left: Col. Malcolm K. Andresen, Lt. Col. Albert D. Bores, Lt. Col. George W. Johnson, Maj. Forrest R. Dupont, Capt. Lewis F. Gifford Jr., Capt. Warren E. Maull, CWO Anthony S. Bondhus, 1st Lt. Lewis R. White, Maj. Theodore G. Zeh Jr., Maj. Frank A. Silvasy, Henry D. Townsend, Harry C. Heil, Donald E. Moore, Anthony L. DiMasi, Maj. John M. Mickelson.

## AFPR's Key Role Links Astro and Customers

What is the shortest possible time span required to remove an Atlas weapon system from alert status, update it to enhance its readiness, then return it to alert status?

Top strategists, representing Air Force and industry, are probing for that answer now.

When final answers are evident, an unusual organization will have played a key role behind the scenes through which a rare insight into the problems, plans and capabilities affecting both military and industry units involved.

This is the Air Force Plant Representative (AFPR) office at General Dynamics/Astronautics commanded by Col. Malcolm K. Andresen, USAF.

Col. Andresen's command is one of remarkable contrasts. It accepts, or in a sense "buys," Astro products, yet has nothing to do

with procurement. It administers every prime contract, but does not write them. It represents every government agency at Astro, yet belongs to but one. Its scope ranges from weapons for defense through study contracts and launch vehicles for purely scientific purposes. It has been a vital factor in deploying the Atlas weapons system, but would have nothing to do with pushing the "commit" buttons, if the need arose. And, while known as an Air Force organization, its military personnel (16 Air Force officers) are far outnumbered by civilian personnel (about 200).

In official language the AFPR duties are centered about administering every prime contract held by Astronautics and in providing secondary administration on other contracts in which Astro is involved.

This means, in short, that the AFPR is responsible for seeing that Astronautics products meet every contract specification from quality and cost through schedules.

"We share with you (Astro) a common goal—a quality product on schedule and within cost commitments," Col. Andresen said.

"When these conditions are met, our duties include a pleasing aspect—we institute vouchers to see you are paid for your efforts," he added.

(Since the AFPR office was established at Astro, shortly after the move to Plant 71, it has processed contracts totaling \$2,901,870,992!)

Carrying out assignments within the AFPR are personnel with skills as varied and all-inclusive as their counterparts in the industry they work with. There are engineers of every type, production specialists, planners, analysts, quality control types of every description, as well as clerks and typists.

They are located throughout Astronautics facilities in the San

## International Posts Filled

Appointment of C. Anthony Chapman as director of marketing—international, and of Allen C. Siebens as director of administration—international, was announced this week by John A. Dundas, General Dynamics Corporation vice president—international.

Prior to joining General Dynamics, Chapman was with Lockheed for 12 years specializing in international marketing, and since 1960 was vice president—sales,



C. A. Chapman A. C. Siebens

Lockheed Aircraft International. Previously he was with Handley Page, Ltd., resigning in 1950 as technical assistant to the chairman and managing director. A graduate aeronautical engineer, Chapman was born in England and was educated at Maiden

(Continued on Page 2)

## Framework Formed For Value Control; Coordinators Named

General Dynamics/Astronautics placed its value engineering program on a new basis last week by opening a VE seminar which is expected to "pay its own way."

The seminar is the first to be held within the framework of GD/Astro's value control organization (Dept. 165) established under Frank J. Traversi, vice president—administration, with E. D. Heller, manager.

This consists of value control coordinators in all major departments who report functionally to Heller and administratively to the management of their respective departments.

Coordinators were drawn to large degree from among graduates of value engineering classes held under auspices of educational services (Dept. 130-3) for several years.

They include R. N. Babcock (material), L. H. Boggess (controller), L. G. Curtis (research, development and engineering), R. W. Eichman (Atlas weapon system), E. A. Lindem (industrial relations), G. M. Loudermilk (operations).

G. J. Bartolomei is assistant to Heller.

For the seminar, participants were assigned to teams whose members represent a cross-section of GD/Astro departments. This permits pooling skills and specialized work experiences.

Team activities are synonymous with the accepted definition of value engineering: "To systematically apply recognized techniques to identify the function of a product or service; to establish a value for the function; and to provide that function at the lowest total cost without degradation."

All projects are directly involved with some current phase of GD/Astro operations.

A standard has been set, and the work of each team is expected to measure up: to return in savings several times the cost of time spent in seminar activities!

Teams and their projects are:

Team #1: Pod doors-space launch vehicles. J. E. Carlin (Dept. 403-3), J. B. Chianciarulo (AFPRO), R. L. Denmark (Dept. 401-2), Lee Ely (Dept. 382-0), J. Nesbit (Dept. 527-5). Project leader, Lloyd Curtis.

Team #2: Staging shut-off valve, Atlas F series, booster side. L. Cox, P. E. MacIntosh (Dept. 193-1), G. Mansur (Dept. 527-5), H. McDuffee (Dept. 700). Project leader, Curtis.

Team #3: Ambient helium bottle sup-

port assembly. J. M. Mack (Dept. 400), C. P. Kiel (Dept. 194-0), W. J. Couchois (Dept. 373-1), H. D. Thompson (Dept. 403). Project leader, Bartolomei.

Team #4: Fuel fill-line support. G. F. Bailey (Dept. 383-1), J. Politis (Dept. 527-5), S. D. Royer (Dept. 150), M. W. Young (Dept. 781), K. S. Veach (Dept. 300). Project leader, Bartolomei.

Team #5: Centaur equipment support and attach mechanism. R. N. Babcock (Dept. 360), D. M. Bloxam (Dept. 373-3), Herb Boynton (Dept. 290), J. A. Krager (Dept. 527-5), T. Rockar (Dept. 210). Project leader, Wells Christie.

Team #6: Exhaust bracket. W. B. Ambrose (Dept. 303), H. F. Hudson (Dept. 400), F. H. King (AFPRO), E. D. Popovich (Dept. 527-5), J. F. Zerbi (Dept. 250). Project leader, Christie.

Team #7: Torus ring, LOX manifold. T. L. Cross (Dept. 400), W. M. Farrell Jr. (Dept. 812-2), A. Freeman and H. M. Osborn (Dept. 527-5), E. W. Stelmack (Dept. 384-2). Project leader, George Pavlovich.

Team #8: Helium shroud half. J. D. Angelman (Dept. 195-0), B. J. Apperson (Dept. 380-6), J. H. Browning and Loudermilk (Dept. 400), Dale Sturham (Dept. 250). Project leader, Pavlovich.

## Full Support Given Value Control Effort

A frank business analysis and a charter to "produce" greeted participants in General Dynamics/Astronautics initial value engineering seminar last week as

Frank J. Traversi, vice president—administration, addressed the opening session.

In reviewing changing trends in government spending, Traversi said:

"The aero-industry now finds itself in a 'survival of the fittest' stage. We must reduce the COST of producing a quality product to meet an established selling price."

"We need value engineering," he said. "And at GD/Astro we intend to give it a good deal more than 'lip service.'"

Traversi told the group that two aims had been assigned to the division value control program. It is expected, first, to evaluate GD/Astro products to improve their value; and second, to reorient thinking to value engineering terms.

"We must move fast," he said. "We must apply value engineering in more than a few localized instances. We must achieve total value engineering consciousness throughout the division."

Traversi stressed that the seminar was not an "academic exercise" and is expected to serve a useful purpose.

"In your efforts, you have unqualified management support," he told the group. "Management will do whatever it takes to make this program successful. But, just as you will evaluate your seminar projects, management will evaluate the evaluators, and we expect benefits."

"In business, benefits are measured in terms of dollar return. You have great opportunity here to produce these returns."

"We expect results."

## ROGERS, HUNTSMAN, LYNCH APPOINTED

Personnel appointments within General Dynamics/Astronautics' Atlas weapon system and space launch vehicles projects were announced early this month by President J. R. Dempsey.

J. M. Rogers was named assistant



J. M. Rogers E. J. Huntsman

program director—support, for AWS, while E. J. Huntsman assumed the post of manager, activation and support for this project. Both report to W. L. Van Horn, vice president and program director—AWS.

(Continued on Page 2)

## GD/Astro Wins \$931,099 Life Support Contract

General Dynamics/Astronautics has been awarded a \$931,099 contract for design and fabrication of an advanced four-man six-month life support system for National Aeronautics and Space Administration.

Work under the contract will be carried on in GD/Astro's life sciences section (Dept. 594) under personal direction of Dr. R. C. Armstrong, manager, for NASA's Langley Research Center, Hampton, Va.

GD/Astro will undertake 18

months of research, design, fabrication and testing, with concurrent participation by Langley Center scientists and engineers.

At contract conclusion, the company will deliver a fully-operating prototype life support system including atmosphere and thermal controls, water management, hygiene and sanitation and other controls, sensors, displays and instruments to form a completely integrated system.

A total of 10 companies had filed proposals for the award.





WIDE SCOPE — Responsibilities of AFPR office at GD/Astronautics cover wide range. At left, J. M. Luna and R. E. Lowe, quality control acceptance team members—Mercury, and F. D. Boone, quality control supervisor, examine electrical harness. Left center: a typical meeting to maintain close communication between AFPR staffers and GD/Astro production management. Right center: Lt. Col. George W. Johnson and Capt. Warren E. Maull, AFPR development engineering, watch lab test conducted by Willie Futch, Dept. 756. Right: A. E. Hinck, F. B. Arthur and R. E. Lowe inspect Atlas sensing component.

## Log Book Entries

### Service Emblems

### Retirements

**MAIN PLANT**

Service emblems due during the period June 16 through June 30.

Twenty-five-year: Dept. 830-0, D. F. Kline; Dept. 834-1, H. D. Cromartie.

Twenty-year: Dept. 148-0, J. M. Leech; Dept. 190-0, J. D. Milling; Dept. 835-2, S. J. Webster Jr.

Fifteen-year: Dept. 143-2, Mary P. Nickel; Dept. 322-3, M. J. Martinez Jr.; Dept. 363-2, R. W. Lake; Dept. 403-1, H. H. Hyde; Dept. 759-0, W. A. Fields; Dept. 782-0, W. R. Horning.

Ten-year: Dept. 015-0, R. E. Little; Dept. 101, J. F. Armstrong, Barbara J. Sjoblom; Dept. 123-0, D. R. Pierce; Dept. 130-1, G. L. Duncan; Dept. 143-1, M. E. Howell; Dept. 250, I. W. Bjorkman, J. H. Lipscomb, B. L. McElhose, H. D. Moore.

Dept. 322-8, Edgar Davies; Dept. 324, H. V. Stickel, E. J. Tyndale Sr.; Dept. 363-2, D. P. Isaac; Dept. 375, R. A. Freedman, T. P. Robinette; Dept. 376-1, F. R. Sedlund; Dept. 382-1, D. W. Bryant; Dept. 387-3, F. B. Spieker; Dept. 451-0, J. W. Yates; Dept. 460-0, D. A. Haslanger; Dept. 480-0, F. J. Chalupnik Jr.

Dept. 522-2, W. C. Edwards Jr.; Dept. 523-1, C. L. Smith; Dept. 662-5, Rebecca M. White; Dept. 715-0, K. G. Bowman, R. T. Hebert; Dept. 732-0, W. M. Kain; Dept. 756-0, H. O. Schroeder; Dept. 759-0, E. C. Cass; Dept. 832-1, Patricia K. Hawkins, P. W. Lunetta; Dept. 835-3, H. F. Mellen; Dept. 953-3, J. H. Thompson; Dept. 972-0, R. E. Florez; Dept. 974-2, A. H. Muller; Dept. 999-0, F. W. Rose.

**MAIN PLANT**

ABBOTT—W. T., Dept. 684-6, Seniority date March 6, 1956. Retired May 31.

BERG—Peder, Dept. 771. Seniority date Oct. 23, 1950. Retired May 31.

GIDDINGS—H. E., Dept. 620-3. Seniority date Sept. 4, 1958. Retired April 1.

HOFFMANN—William, Dept. 831-1. Seniority date, June 12, 1952. Retired May 31.

HOMAN—Elmer E., Dept. 250-1. Seniority date Sept. 21, 1954. Retired May 1.

MARSHALL—F. F., Dept. 143-6. Seniority date June 25, 1951. Retired May 31.

RATH—Rena E., Dept. 650-0. Seniority date Jan. 18, 1952. Retired May 31.

**Births**

**MAIN PLANT**

BRUNDEGE—Son, Stephen Edwin, 8 lbs., 1 oz., born June 6 to Mr. and Mrs. E. E. Brundege, Dept. 142.

MYERS—Daughter, Wendy Lee, 10 lbs., born May 14 to Mr. and Mrs. Bob Myers, Dept. 958-2.

## Papers Presented

AAKUS—Miles D., Dept. 591, "The Role of Modern Mathematics in Computer Technology," Grossmont High School, June 10.

FERRISO—Dr. C. C., Dept. 596-2, "Infrared Emission Measurements on Atlas During Sustainer Flight and Post Engine Burnout," IRIS National Meeting, Dallas, Texas, May 6-8.

FULLARTON—A. M., Dept. 454, "Hammer Forms and Prototype Draw Dies," Fifth Annual Seminar, Plastics for Tooling, Purdue University, June 4.

JAMBOR—Larry D., Dept. 549-8, "Automated Reduction and Presentation of Electro-Magnetic Interference Data," IEEE National Radio Frequency Interference Symposium, Philadelphia, June 4-5.

KALITINSKY—Andrew, Dept. 504, "NOVA Launch Vehicle Design Studies," Symposium on Exploration of Mars, Denver, June 6.

NICHOLAS—Harold B., Dept. 558-5, "Component Mounting for Environment Protection," National Electronic Packaging and Production Conference, New York, June 4-6.

ROTHE—E. W., Dept. 596, "Interaction Potentials from the Velocity Dependence of Total Atom-Atom Scattering Cross Sections," for publication in The Physical Review, Upton, New York.

## Personals

**MAIN PLANT**

Please accept our grateful acknowledgment of your kind expressions of sympathy.

The family of William F. Gannon.

I wish to thank my many GD/Astro friends for their thoughtful expressions of sympathy in the recent loss of my father.

Herman Schultz Jr. (Dept. 832-2) and family.

## Deaths

**MAIN PLANT**

GARRETT—Clinton C., Dept. 143-2. Died June 8. Survived by sister.

SCHULTZ—Margaret J., Dept. 336-5. Died June 11. Survived by daughter, Cynthia.

## General Dynamics NEWS

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Pomona Editorial Offices, Room 106-D, Bldg. 1, GD/Pomona, Mail Zone 3-3, P.O. Box 1011, Pomona, Calif. Telephone, NAtional 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor; Carol Sowers. Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone LOne Star, Texas, 2211, ext. 424.

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## AFPR's Key Role Links Astro and Customers

(Continued from Page 1)

Diego area. They work alongside those performing every phase of fabrication and tests. And they take part in planning such details as acquiring new tools, equipment and pending moves from one point to another, etc.

There are five major divisions within the AFPR office, each composed of two or more branches. Heading these divisions are: Lt. Col. R. B. Kelly, development engineering; P. D. Sanchez, contract administration; H. D. Townsend, production; D. E. Moore, quality control; and CWO A. S. Bondhus, management support.

Lt. Col. D. B. Emery is deputy AFPR; Lt. Col. A. D. Bores, assistant AFPR; and Maj. A. F. Silvasy, chief of Plant 19 operations for AFPR.

As a direct representative of every governmental agency doing business with Astronautics, the AFPR plays a key role in present and future programs for study, research and development, production and final deployment. It provides the National Aeronautics and Space Administration with support through contract administration, quality control, inspection, etc., for programs such as Centaur, as well as future programs "in the works."

Col. Andresen reports to Brig. Gen. John L. Zoekler, commander of the Western Contract Management Region at Mira Loma AFS near Riverside. This Air Force Systems Command organization administers all contracts in a 13-state western region. Currently, it handles more than 17,000 contracts with a dollar value exceeding \$28.3 billion.

The Astro AFPR is handling 291 of these contracts representing an obligated amount of over \$2.771 billion.

Personnel within the AFPR are proud of their record in supporting such programs as Mercury, Centaur, Mariner, etc., just as they are proud of work on behalf of activating Atlas operational bases. They look to more active roles in the future in updating

## Starlight Musical Tickets Offered

Reduced price tickets for four Starlight musicals to be held during the summer in Balboa Park Bowl will be offered GD/Astro employees through employee services office, Bldg. 8.

First show is "Around the World in 80 Days," with tickets for the Sunday, July 14, performance now available. Prices are \$3 for regular \$4 seats, with \$3.50 tickets selling for \$2.65.

Other shows will be "Desert Song," Aug. 14; "The King and I," Aug. 25; and "Unsinkable Molly Brown," Sept. 14.

## 'Girl Watchers' Pick GD/Astro Secretary

GD/Astro secretary Jan Greer, motion pictures and television (GD/Astro Dept. 124), has been named "Girl of the Month" by the International Society of Girl Watchers.

A finalist in this year's ARA Queen contest, Jan will join the Girl Watchers' "Court of the Watchables" and next year will be one of 12 candidates for the title "Miss Second Glance."

certain of these facilities.

Quick to meet changing conditions, Col. Andresen's organization recently shifted its forces to directly support the new Astronautics project alignment.

"It is imperative that open communication channels on all levels be maintained within the AFPR and Astronautics functions," Col. Andresen said. "This is our key means of working together toward common goals."

## Rogers, Huntsman and Lynch, Capper and Scanlon Named

(Continued from Page 1)

In the space launch vehicles project, P. J. Lynch assumed new duties as chief engineer—design, reporting to F. D. Applegate, assistant program director, engineering.

Both Rogers and Huntsman joined the company in the early 40s.

Rogers held supervisory posts in B-24 final assembly

during World War II, and joined the Model 7 program (from which Atlas evolved) in 1958.

He subsequently served in various GD/Astro product support functions, becoming support center operations superintendent in 1959. Prior to his new assignment, Rogers was manager of activation and support for the AWS project.

Huntsman has served in a variety of posts, including that of chief of operations support at GD/Astro's Sycamore Canyon Test Site. During Atlas base activation efforts, he was activation works manager, and later activation manager for D and E, and E and F bases, successively.

For the latter assignment, he was cited recently with an award from Air Force Ballistic Systems Division (General Dynamics NEWS, June 12).

Lynch, a graduate of St. John's University, New York City, joined Convair at San Diego in 1939, then transferred to Fort Worth in 1942 and held a number of engineering posts at that division.

He joined GD/Astro in 1957 as chief of field test, and subsequently served as assistant chief engineer—design support, and in the AWS project.

## Capper Appointed To Program Control

Howard K. Capper has been named manager of program control, space launch vehicles, at

General Dynamics/Astronautics, succeeding R. A. Wohl who has accepted a position with General Dynamics Corporate office, New York.

Capper's appointment was announced last month by C. S. Ames, vice president and program

## Armstrong Transfers To Centaur Program

A shift in assignments has been announced for two top engineering executives at GD/Astronautics.

G. L. Armstrong, formerly director of systems integration, has shifted to the Centaur program as assistant program director—engineering.

P. D. Ferrara who previously held this post has moved to research, development and engineering to direct administrative activities, reporting to W. W. Withee, vice president—engineering.

director—space launch vehicles.

Capper is a native of Tulsa, Okla., and a business administration graduate of Pepperdine College, Los Angeles.

He joined GD/Astro in 1956 in production control where he held various supervisory positions. Other assignments have included material project administrator, and assistant to the director of material.

Prior to assuming his present post, Capper was chief, scheduling, planning and control for space launch vehicles.

## Scanlon Appointed Ind. Account. Mgr.

J. F. Scanlon has been named manager of industrial accounting at General Dynamics/Astronautics reporting to J. D. Milling, assistant controller.

A native of Ohio, Scanlon studied at Notre Dame, and holds a bachelor's degree in commerce from Xavier University, Cincinnati.

He served as a Navy lieutenant during World War II, and joined General Dynamics at the Convair division in 1950.

Scanlon served as general supervisor in both material control and inventory control at GD/Convair, and prior to joining GD/Astro in 1961 was chief of material control.

## International Positions Filled

(Continued from Page 1)

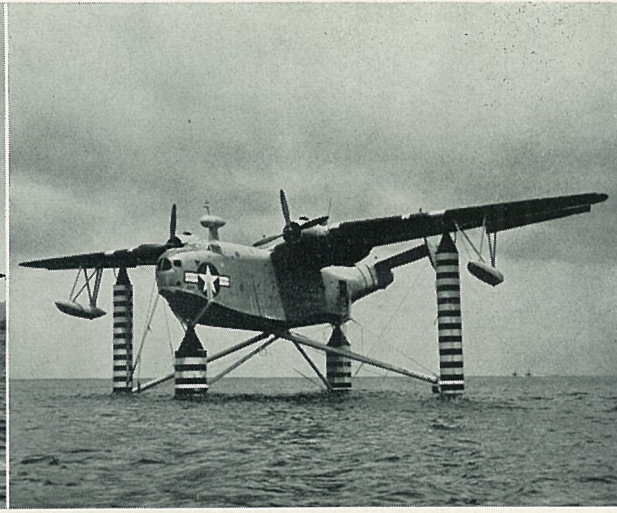
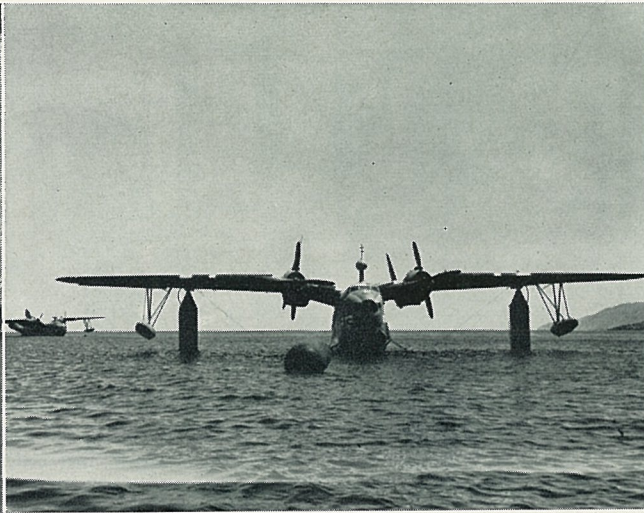
Erlegh College and London University.

Siebens was assistant to the chairman of General Dynamics from 1957 to 1962 and assistant to the vice president—international during the past months. From 1955 to 1957 he was special assistant to the chairman of American Machine and Foundry Co., and from 1946 to 1955 was a foreign service officer, including three years in the Far East and six years in Europe. A graduate of Oberlin College, Siebens from 1941 to 1942 managed the personnel recruitment office at the AF Materiel Center, Wright Field. He was a Naval officer from 1942 to 1946 and subsequently was special assistant to the U. S. High Commissioner in Germany.



H. K. Capper





**SOLID "BED"**—PBM seaplane (at far right) is hoisted high out of water on stilt-like floats, two supporting fuselage and one under each wing. Floats were designed at GD/Convair under Navy study contract for stabilizing seacraft in rolling waves. At left, mechanics attach large float to aft fuselage at test site in Pacific Ocean,

near San Clemente Island, where initial tests were held last month. In center, PBM equipped with floats rests steady, while unmodified seaplane at far left rolls with swells, bringing green cast to faces of several sturdy seamen. Men and instrumentation on stabilized plane were unaffected.

## East Coast Computer Service Established by GD/E, Recordak

A new business service bureau for East Coast computer users has been established in Washington, D. C., jointly by General Dynamics/Electronics-San Diego and Recordak Corp., a subsidiary of Eastman Kodak Co.

For the first time, computer centers in government and industry can have the advantage of high speed conversion of computer "records" to more usable form on an hourly or job basis.

The new facility is equipped to translate computer output codes directly into understandable language and drawings on microfilm and paper.

Heart of the service is GD/Electronics' S-C 4020 computer recorder. At speeds consistent with today's large-scale computers, the S-C 4020 transforms magnetic tape recordings into usable language and graphics on both page-size photo-recording paper and on compact microfilm for instant accessibility and automated information retrieval. Complex annotated charts or drawings can be recorded by the S-C 4020 in

less than a second.

Multiple film or paper copies are then readily producible for distribution from the primary microfilm records using Recordak equipment.

According to the joint announcement by GD/E and Recordak, the service facilities of the new bureau are as complete as they are simple to use. The computer user merely sends magnetic output tapes to the service bureau. Within a few hours, they are ready for delivery along with the microfilms and/or photo-recorded translations to paper form to meet individual requirements.

Engineers, scientists, and business managers now can have the answers to computer-calculated problems, or fully annotated graphs and drawings produced by their own computers, more quickly and in more practical form than is possible with conventional printout methods.

Special programing and consultation services by GD/Electronics specialists are part of the service bureau "package."

## Bowen Moves To Washington

J. E. Bowen, manager of Navy requirements at GD/Electronics-San Diego, has transferred to the Washington, D. C., office of General Dynamics as requirements representative—electronics.

In his new post Bowen will be primarily responsible for contacts with the Navy in areas concerning electronics requirements. He reports to R. W. Menzel, who heads the GD electronics group. E. J. LeFevre is general manager of the Corporation's Washington, D. C., office.

Bowen has been with the company since fall of 1956 when he joined GD/Convair engineering. He transferred to GD/E with its formation in 1961. He was responsible for design and development of pre-flight test equipment for REINS radar, and, as application engineer, was responsible for sales, customer negotiation, and proposal evaluation on airborne radar and terrain following radar systems.

His duties as manager of Navy requirements have concentrated on sales and customer contact in all areas of Navy and Marine Corps cognizance.

"A penny saved is a penny earned." Buy U.S. Savings Bonds by payroll deduction.

## New Weld Techniques Developed In Skin Studies for Spacecraft

Interplanetary space vehicles journeying to Mars and beyond may require skins at least 1½-inch thick to contain the heavy propellant and payloads they must carry.

This is one of the facts being probed at General Dynamics/Astronautics in conjunction with a NOVA study contract.

Andrew Kalinsky, program director, heads the Astro effort being conducted for National Aeronautics and Space Administration's Marshall Space Flight Center.

Studies have led Astro to develop advanced welding techniques through an extensive manufacturing research program for NOVA. And this program is helping resolve manufacturing problems.

J. C. Duffy, manager of NOVA manufacturing engineering, said that Astro-developed welding techniques have centered around 2014 and 2219 aluminum alloys in flat, vertical and horizontal

## Traversi Is Panelist At Value Meeting

F. J. Traversi, General Dynamics/Astronautics vice president—administration, served last week as panelist at a special meeting of Los Angeles Chapter, Society of American Value Engineers.

In a discussion moderated by Dr. H. Lawrence Hall, associate management professor, Los Angeles State College, Traversi presented "An Executive View of Value Engineering."

## PBM Rides High, Steady On Wave-Defying Floats

A PBM, resting on vertical floats designed by General Dynamics/Convair, was virtually unmoved by high waves and winds during initial sea tests off the Pacific Coast last month.

"Sea kindness" qualities of GD/Convair's concept were proved without question, said H. E. Brooke, chief of hydrodynamics, as the seaplane rested perfectly stable on the stilt-like tubes.

Research over the last year under a Bureau of Naval Weapons study contract has allowed GD/Convair engineers to develop devices to hold a seaplane out of water as a rigid platform in the open ocean.

Two PBMs, provided by the Navy, were used in first actual tryouts during the month of May near San Clemente Island. One was equipped with four large floats, one under each wing and two supporting the fuselage. (Test floats were oversize for evaluation purposes.) The other PBM was without floats so that motion of the two seaplanes could be compared.

Seamen from North Island NAS were drafted to ride both planes as they swung in waves up to four and five feet high. Those on the unsupported seaplane were soon hanging over the sides seasick, while people and instru-

mentation on the vertical float flying boat were unaffected, said Brooke, who expressed himself as "eminently satisfied with the outcome of the tests."

"Every point of our model tests in the towing basin was substantiated," he said, "and I can't praise our GD/Convair team enough for the terrific job they did. Everyone involved—from plant engineering, experimental factory, engineering—pitched in to make this a truly cooperative effort."

Negotiations now are under way for a follow-on series of tests in rougher seas and higher waves.

Development of devices to stabilize seaplanes was initiated by Eugene H. Handler, Bureau of Naval Weapons aircraft hydrodynamics engineer, who has followed closely all GD/Convair progress during the current task.

"We believe that the vertical float concept represents a 'break-through' for ASW aircraft, providing a vehicle with a combination of capabilities of cruise speed, range, payload, and sea-keeping unequalled by any ship, hydrofoil boat or aircraft in existence," said Handler.

GD/Convair's tilt float concept is specifically pointed for incorporation into such craft as GETOL (Ground Effect Takeoff and Landing), under study at GD/Convair. The floats are designed to retract under the fuselage during flight and for release when landing on water.

Pivoted channels would be rotated from their in-flight position along the hull keel to vertical positions, locked in place, and inflatable tube-like floats expanded from within the channels to full size. Again, by simply exhausting the air, the floats could be retracted into the channels and swung back to the keel. Wing floats could be rotated and a telescoping extension expanded, or possibly housed in the wings for release.



**MARKED**—Shot of Little Joe II launch vehicle being readied at GD/Convair for move-out to White Sands Missile Range shows pattern of black painted rectangles used to check stability during firing. Telescopic instrumentation systems record missile path on film.

## Product Support Reps Confer To Tackle Mutual Problems

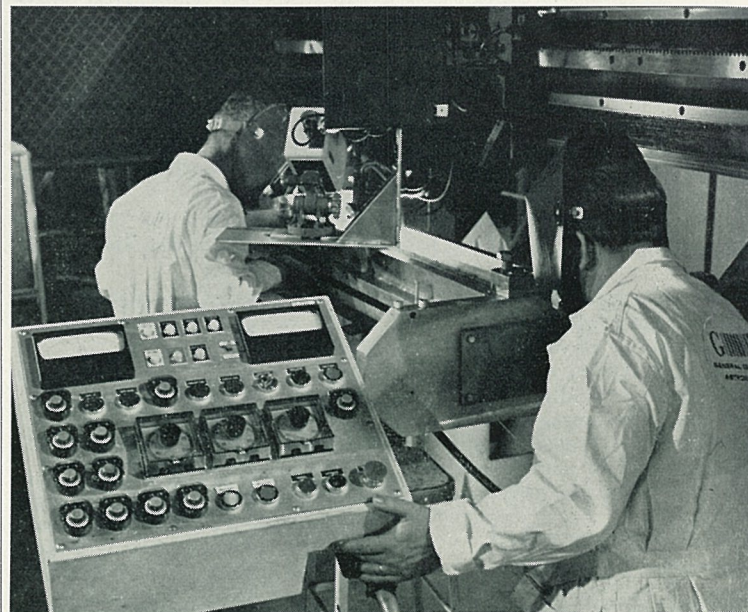
Product support representatives from General Dynamics divisions took part in a Joint Aerospace Industries Association and government conference on weapon systems support problems the week of June 3 in Washington, D. C.

Industry, represented by some 180 managers of product support, spares logistics, and technical publications functions, met with their counterparts within the Air Force, Navy, Army, and the Office of the Secretary of Defense. Discussions dealt with mutual problems involved in the operational and maintenance support of complex and costly weapon systems currently in the inventory

and required for future defense of the nation.

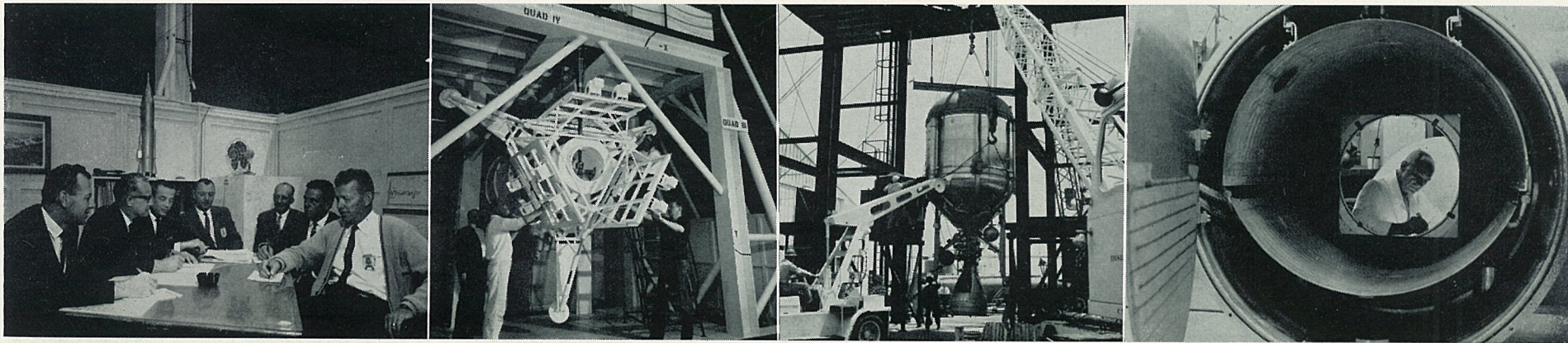
General Dynamics personnel at the conference included K. R. Aiken, service parts manager; A. H. Gross, manager technical publications; R. C. Harbert, manager customer service, all from GD/Astronautics. From GD/Convair were R. W. Emerson of service parts; H. R. Kennedy, chief of technical publications; R. K. Hall of customer service.

GD/Fort Worth was represented by G. B. Clayton, chief F-111 technical publications; B. G. Fay, chief F-111 supply; R. W. McGuffee, manager F-111 logistics support; R. E. Reade, manager logistics support—B-58.



**ADVANCED WELDER**—Astro technicians Ben Esquibel, left, and Rudy Allen operate new fusion welder capable of joining two pieces of 1½-inch aluminum. Astro NOVA studies have indicated interplanetary vehicles of future may require skins this thick to carry propellant and payloads on lengthy space journeys.





IN MANY FIELDS — At left, R. T. Bauman, general foreman, second from left, outlines Dept. 756 activity for Foremen R. G. Carman, D. R. Dayharsh, L. H. Green, W. H. Houchin, T. R. King, H. L. Sterling. In next photo, Dept. 756 crew, Alex

Lupenko, J. P. Bate, Leo Bartoy, R. Stehlik ready Surveyor spacecraft for test. Second photo from right: test vehicle is installed in vibration stand. Photo at right: Walter Grimm checks cold wall unit in environmental test lab.

## Skilled Craftsmen Assigned To Help Scientists, Engineers

Employees of a unique General Dynamics/Astronautics department are scattered throughout two major plants, and from Point Loma on the Pacific's edge to remote Green Farms Test Site in Camp Elliot back-country.

Tasks range from precision milling and boring of exotic metals to preparing equipment for elaborate research projects which span the spectrum of space science from aerophysics to human engineering.

This is engineering test support (Dept. 756), a portion of Factory Manager J. P. Hopman's assembly and fabrication department.

The group, under General Foreman Ralph Bauman, is charged with providing "half" an engineering team—the "doers" and craftsmen on whom GD/Astro's scientists and engineers depend for hardware aspects of their work.

"Home base" for the department is in Bldg. 5 at GD/Astro's main plant where it mans five well-equipped shops and laboratories.

An electro-mechanical lab includes an enclosed, dust-free facility and adjacent open shop area for research, development, manufacture and test of precision mechanical, electro-mechanical, hydraulic and pneumatic components and subsystems.

A near-by machine shop is equipped for precision machining of both the usual and exotic engineering materials for production of test specimens and specialized equipment.

Welding and brazing, soldering, cementing, riveting are accomplished in an experimental assembly shop, also located in Bldg. 5. Projects here range from electronic wiring to construction of working-model space vehicles!

Other Dept. 756 employees are widely scattered among engineering and scientific laboratories throughout the main plant.

Test lab support personnel work side by side with Dept. 560 employees, assisting engineers in setting up and conducting material and chemical tests, vibration and environmental research, and hydraulic and pneumatic studies.

Still others are assigned to development, design and reliability laboratories, assisting with reliability testing and research in space physics, cryogenics, radiation systems, etc.

More assistance to GD/Astro engineers and scientists is provided by Dept. 756 employees working in research and test laboratories at GD/Convair's Plant 1.

Here are centered studies in infrared and optics, fluid systems design, physics. Tests in fields of dynamics, electro-dynamics, electronics and hydraulics are also conducted here.

Testing and research directly related to Atlas and Centaur are aided by Dept. 756 personnel as-

signed to GD/Astro's Point Loma Test Facility.

For assistance in supervising his department's widely dispersed operations, Bauman relies on Foremen R. G. Carman, D. R. Dayharsh, W. H. Houchin, T. R. King, L. H. Green and H. S. Sterling.

They oversee a staff which has been directly involved in nearly every major GD/Astro program, and which provides an important "boost" for constantly evolving new projects.

Among dozens of current programs in which Dept. 756 participates are the recently-completed Atlas vibration test stand at Plant 71, centrifuge studies carried on by life sciences (Dept. 594), micrometeoroid impact research in Dept. 592, the infrared FLIP program, and GD/Astro's advanced LASER studies.

## Modelers Compete In Flight Contest Held Near Elsinore

Modelers from five General Dynamics divisions competed in the Tri-Club semi-annual free flight contest held late last month at Elsinore.

Sponsored by CRA Aeromodelers, Astro Modelers, and San Diego Orbiters, the meet drew contestants from Convair, Electronics, Astronautics, Pomona, and General Atomic, said Commissioner Don Larsen.

An unscheduled demonstration of the ups and downs of flight was seen when a full-scale piloted glider lost its thermal and landed 50 yards from the model flying area, said Larsen. A Piper Cub landed to tow the glider back up into another thermal.

Categories for the modelers' event were ½A gas, A gas, B/C gas combined, A-1 and A-2 glider combined.

Winners from the San Diego area were: Al Lidberg of SD Orbiters, first place, A-1, A-2; Les Hill, SD Orbiters, third place, A-1, A-2; Larry Peterson, CRA club president, fifth, A-1, A-2.

In the ½A class first place went to H. Shimazu, SD Orbiters; fifth to L. Simpson, SD Orbiters. E. Simpson of the Orbiters placed second in A gas; Nat Antonoli of GD/Convair, third. In B/C gas event Wes Woodrey of Astro was third; J. Lesnick, Orbiters, fifth.

High time for the meet was won by Dr. Ray Van De Walker of Los Angeles.

Directing arrangements for the meet was Rolland Dexter of General Atomic.

## Gardeners to Meet For Japanese Film

ARA-CRA Garden Club members will gather at 7:30 p.m., July 3 in Balboa Park's Floral Assn. Bldg. for a presentation by Isamu Kawaguchi, who will show a film on "Gardens of Japan," and demonstrate flower arranging.

The group will also make final plans for its summer flower show slated Sunday, Aug. 11, in Balboa Park.

## Ice Skaters Get Reduced Rates

Ice skating — ARA-CRA's "coolest" summer sport — will continue throughout the season at reduced prices.

The ARA-CRA group holds a private skating party each Thursday, 6:30 to 8 p.m., at Mission Valley Ice Plaza, after which skaters may continue with the general public until 10:30 p.m. at no additional cost.

Summer rates are 90 cents for adults, 75 cents for juniors (12 through 17), 55 cents for children under 12. Skate rental is 35 cents.

Club membership costs \$1 per family per year, with all receipts returned to participants in the form of parties, refreshments, etc. The group also offers free classes for beginning and intermediate skaters under direction of David Pencosky.

Applications are available, and dues will be collected, during any of the Thursday sessions at the Ice Plaza.

No ice skating session will be held next Thursday due to the Fourth of July holiday.

## FEW PLACES LEFT ON MEXICO TRIP

General Dynamics people regretting that they missed the deadline for signing to go along on the de luxe tour of Mexico this summer have another chance, if they hurry!

Jim Hardison of GD/Convair Dept. 15, who is conducting the trip by train to Mexico City and Acapulco this summer, said that a few more openings have been made available. All GD employees and their families are eligible to take the two-week tour, Aug. 16-Sept. 1.

However, they must call Hardison immediately to be included. He may be reached evenings on his home phone, 276-5805.

Over 100 people from GD/Astro, GD/Convair and GD/Electronics enrolled in the two short Spanish courses started last week by Hardison, under CRA-ARA sponsorship.

Anyone signing for the Mexican tour will find the instruction in common phrases especially helpful, said Hardison. Classes are still open to GD people and their families. Beginning class is held Mondays, 7-9, in the Convair executive dining room, Pacific Hwy. Intermediate class meets Tuesdays, 7-9, in the cafeteria's main dining room.

## GD/Astro Daughter Is Title Candidate

GD/Astronautics daughter Judith Ann Cheek, 16, was Lemon Grove's entry in the recent Miss Southern California.

Her father, James H. Cheek, is assigned to GD/Astro's Sycamore Canyon Test Site (Dept. 573-4), and her grandfather, Albert E. Ward, is in GD/Convair Dept. 25.

## SEE PLANT 1 REP. FOR ARA SERVICES

Astro employees located at Plant 1 may obtain discount tickets and information on other Astro Recreation Association offers and activities from the Plant 1 representative, Betty Howard, Room 386; third floor, Bldg. 51. Extension is 2063.

## General Dynamics Golf Players Collect Trophies in NMA Meet

A GD/Pomona golfer took overall honors and 17 linksmen from Convair, Astro, and Electronics won trophies in the 11th annual NMA golf tournament held the weekend of May 4-5 over Palm Springs courses.

R. G. Antonopolis of GD/Pomona won low gross with 143 (70, 73) and low net, 133.

Convair prizes, based on Saturday putting scores, went to John Doig of Convair who took home a pitching wedge for the fewest putts and W. F. Van Dusen of Astro, a putter for the most putts.

Winners from Management Club entries at Astro, Convair, and GD/E were: Eagle Flight—C. Maxfield, Astro, second, 138.

Falcon Flight—E. Williams, Convair, second, 147.

Hawk Flight—Gerry Cox, Convair, first, 145.

Condor Flight—F. Pease, Astro-Edwards Rocket Site, second, 146.

Shrike Flight—Larry Failor,

Astro-ERS, first, 134; Dick Gottschall, Convair, third, 145.

Finch Flight—M. C. Val Dez, Convair, second, 149.

Heron Flight—Fred Grossher, Astro, second, 140.

Robin Flight—G. Burks, Astro-ERS, third, 145.

Thrush Flight—J. H. Thompson, GD/E, first, 135.

Grouse Flight—J. Jodka, Convair, first, 135; J. Burt, Convair, second, 145.

Jay Flight—D. Spencer, Convair, second, 144.

Parrot Flight—Jim Luckett, Convair, first, 136; E. Galbos, Astro-ERS, second, 145.

Coot Flight—Ernie Damarus, Convair, second, 148.

Vulture Flight—R. Miller, Astro, second, 142.

Pete M. Brown of Lockheed-California Co. was tournament chairman. Heading arrangements at GD/Convair and GD/E was Gerry Cox, assisted by Terry Kell. Art King was Astro golf chairman.

## GD/E Squad Wins Trapshoot As Astro Takes Skeet Event

General Dynamics sharpshooters swept the field in annual IRC competition, hosted by the CRA-ARA Gun Club June 9 at Gillespie Field Range.

A five-man squad from GD/Electronics took top honors from the six teams competing in the trapshoot event, scoring a total of 237 out of a possible 250. Individual scores were: Howard Jacklin, 47; Jack Swank (CRA commissioner), Ken Faught, Wilbur Betteridge, each 48; and Steve Swank, son of Jack, 46.

Another GD/E team tied with GD/Convair's squad at 230 for second spot. Solar squads took third and fourth places, and Astro Management Club stood fifth with 213.

Skeet event was won by a GD/Astro team with 217 points out of a possible 250. John Draggie was high man with 48; H. Feehan, 47; Al Stroing, 42; Jim Hartman and E. Holland, both 40.

It was followed in order by GD/Convair in second spot with 210; Rohr, third, 200; Astro Management Club, fourth, 198.

Astro's rifle squad was second in its event with a score of 1,462, just 15 points behind first-place Ryan.

A perpetual trophy went to the

winning trap team with each man on the first-place trap and skeet squads taking home individual trophies.

Coming events scheduled by the CRA-ARA Gun Club include a troy-type trapshoot at 7:30 p.m., June 28. Regular club matches will be held the first Sunday morning of the month, July 7.

A registered ATA trapshoot is set for July 14 and a registered skeet shoot for the following Sunday, July 21.

## Astro Pistol Team Wins IRC Gun Shoot

Astro's No. 1 pistol team took the pistol division of the recent IRC Gun Shoot, hosted by the CRA Pistol Club.

It headed a list of 12 teams with a total score of 1,167. Team members were Gordon McPherson, 296; Ralph Sanderlin, 288; Al Schindler, 294; Red Schneider, 289.

In second place was Convair's team with 1,137. Scores were: Joe Williamson, 286; Vern Maridis, 293; Jim Halfacre, 288; Ralph Picard of GD/E, 270.

Other teams ended the event in the following order: County Sheriffs No. 1, 1,126; Astro No. 2, 1,125; Pacific Telephone, 1,122; North Island NAS Civilians, last year's winner, 1,106; Ryan, 1,104; Sheriffs No. 2, 1,077; Solar, 1,062; Astro No. 3, 1,053; City Engineers, 985; Astro No. 4, 977.

## Final Trips Scheduled For Airlift to Cape

The C-118 airlift, which for the last six years has linked Astro business travelers in San Diego with Air Force Missile Test Center at Cape Canaveral, will conclude operation this week.

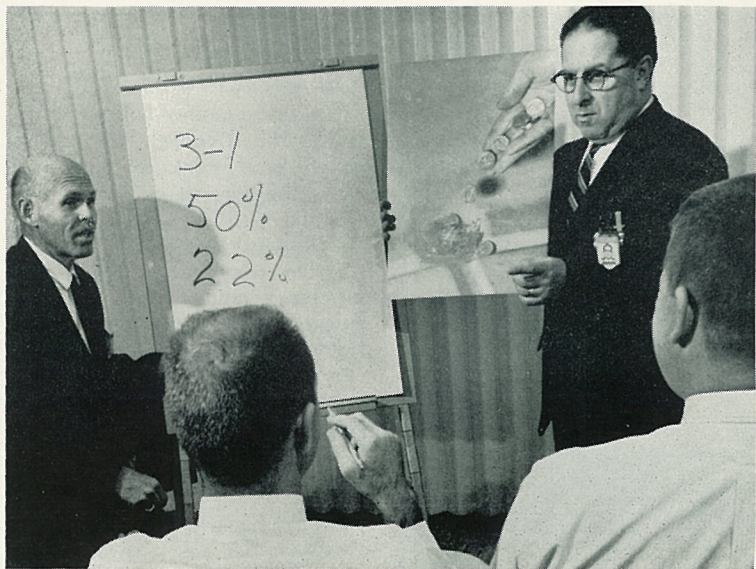
Final eastbound flight will depart GD/Convair north flight gate at Lindbergh Field on June 28 with the terminal westbound trip June 29.

## Astro, Convair Set Salvage Schedule

Salvage yards at GD/Convair and GD/Astronautics main plants will be open for employee sales on the following alternating Saturday morning schedule:

GD/Astro—June 29, July 13.  
GD/Convair—July 6, 20.





**FINE FIGURES**—First materials handling class for supervision at GD/Astro found instructor Emory Thurston, seated left, pointing out significant statistics of subject as Ben Handwerker, right, holds photo to make point that poor materials handling is like "pouring money down drain."

## Astro Begins Classes In Material Handling

A training program emphasizing responsibilities of first-line supervision toward good material handling practice opened this week as part of a continuing effort in this area at General Dynamics/Astronautics.

Initial class meeting for the first group of about 25 assistant supervisors was held Monday (June 24) under auspices of the educational services section, industrial relations (Dept. 130-3). A second meeting was slated today, with the first group to complete training Friday.

Supervisors in planning, tooling, production, manufacturing control, inspection, transportation, testing, etc., will attend subsequent classes.

Instruction is handled by Emory Thurston of educational services with technical assistance from Ben Handwerker of the materials handling section, applied manufacturing research and process development (Dept. 290-1).

"One of our major goals is to present materials handling as far more than a 'fork-lift' operation, and to encourage first-line supervisors to take a personal approach to this activity in its various forms within their areas," Thurston said.

## Industrial Engineers Elect GD/Astro Man

G. W. Hedling, GD/Astro Dept. 210-1, was named national director of chapter expansion, American Institute of Industrial Engineers, at the recent AIIE convention in Denver.

Both Hedling and Dr. R. W. McGuire, GD/Astro Dept. 250-2, attended the conference, where Hedling also received the "Johnson Award" on behalf of the San Diego AIIE chapter.

Hedling was 1962 president of the local group and is a member of its board of directors. Dr. McGuire held the chapter post in 1961, and also serves as director.

Do today what a year from now you will wish you had done. Sign up for U.S. Savings Bonds purchase through payroll deduction.



"Slower, Dear! There's a curve up ahead."

## Bond Campaign Finale Nears

Preliminary results of a U. S. Savings Bond drive throughout Astronautics appear encouraging this week as active bond buyers now switched attention to a drive finale coming up next week.

This is a drawing at which two lucky bond buyers will receive bonds with a maturity value of \$125. It will be held at noon July 3 in the outdoor dining area adjacent to the cafeteria at Plant 71.

Those now buying bonds through payroll deduction, whether in the program previously or signing up during the drive, will be eligible.

Tab cards for each will be placed in a container. Two will be drawn at random, the first receiving a \$100 (maturity value) bond and the second a \$25 bond. Employees do not have to be present to win.

Astronautics began the bond drive June 17 in conjunction with other General Dynamics divisions. Goal of each was to encourage at least 70 per cent of employment to join the payroll deduction plan.

Monday (June 24) was the final day for turning in sign-up cards. The drive ends officially June 30.

## Vandenberg Mgt. Club Awards Scholarships

VANDENBERG AFB—Astronautics Management Club here has awarded scholarships of \$500 each to two high school students, one from Santa Maria, and another from Arroyo Grande.

Winners were Allan Kreiss of Santa Maria and Terry Jones of Arroyo Grande.

Contestants were from the two areas named, plus Lompoc and Santa Ynez high schools. Ten students, all with straight "A" scholastic standings, vied for awards.

Frank H. Burris was chairman of the scholarship committee with Dudley Gimber and Robert Jacobs as committee members.

## Astro Nauts Planning Annual Summer Fete

Astro Nauts, ARA square dance club, will hold its annual "Summer Breeze" dance in ARA Clubhouse, 8 to 11 p.m., June 29, with Bob Ruff of Whittier as caller.

A maximum of 25 squares can be accommodated, and prospective participants are encouraged to obtain tickets (\$1 per person) as early as possible from any Astro Nauts member.

Additional information is available from Pat Hawkes, ext. 1230.

## Hi-Fi/Music Club Presents 'Barkers'

Laughs and folklore will combine tonight (June 26) when ARA Hi-Fi/Music Club presents an in-person performance by the Scottsville Squirrel Barkers.

The group is billed as "the finest blue-grass singers on the West Coast" and provides vocal counterpoint for an accompaniment of bass, guitar, "upside-down" guitar, banjo and mandolin.

The show starts at 8 p.m. in Room 7, ARA Clubhouse. Donation is 75 cents per person.

## Catalina Weekend Planned For Astro

A weekend on Catalina Island has been scheduled for GD/Astro employees through ARA with reservations now being accepted at employee services office, Bldg. 8.

The event is scheduled July 26-28 with a package price of \$27 per person including bus and boat transportation round-trip, box lunches Friday evening, and two nights' lodging at Catalina's St. Catherine Hotel.

A \$10 deposit will hold reservations.

# Sports & Recreation



**SONGSTERS**—Pictured in concert robes following one of several recent performances throughout community is ARA choral group, Astro Notes. Commissioner Al Phillips is at left, rear row, while Director Jim Rogers is seated at right, front row.

## Softball Team Lists Schedule

GD/Astro softball fans have been invited to support ARA's representative softball team, now scrambling for the first half crown in San Diego open division softball league.

Up-coming Astro games include: El Cajon Hawks, 8 p.m., June 27, Helix High; Ryan Firebees, 9 p.m., July 1 at Helix High; USS Sperry, 8 p.m., July 3 at Golden Hills; Tamale Kings, 8 p.m., July 8, at Golden Hills.

## Archaeology Club Will Hear Traveler

ARA Commissioner Ben Pierce will be featured speaker at ARA Archaeology Club's meeting at 7:30 p.m. tonight (June 26) in ARA Clubhouse.

Pierce, an anthropologist in GD/Astro's life sciences section, traveled to the highlands of Bolivia and Peru in 1961 to study native adaptation to high altitude environment.

He will accompany his talk on archaeology sites in those areas, with color slides of the ancient Inca capital, Cuzco, the fort of Sacahuaman, and the "Lost City" of Machu Picchu.

## Rockhounds Elect Gerald Halterman

Gerald Halterman was installed as president of ARA Rockhounds at the club's meeting earlier this month.

Earl Manor is vice president; Barbee Schiebner, secretary; and George Boone, treasurer. Members of the board of control are Viola Beard, Margaret Harland, Walter Passino, Dutch Flora, Sarah Smith, Ernie Twiss and Past President Ivan Hamblin.

ARA Commissioner and Mrs. Fred Baugh received an achievement trophy in recognition of their long service to the club.

## Trio of Grads In Astro Family

Martin W. McCreary, GD/Astro Dept. 526, was involved in three graduations this year and heard in-person addresses by both the president and vice president of the U.S. within two weeks.

On June 5, Ensign Martin W. McCreary Jr. was graduated from U.S. Naval Academy, where Vice President Johnson was speaker. The following day, the McCrearys were in San Diego to hear President Kennedy and see daughter Mary Margaret graduated from State College.

Not to be outdone, younger son Walter was graduated from Coronado High School the following week.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

★ ★ ★

**ARCHAEOLOGY**—Meeting 7:30 p.m. tonight (June 26), ARA Clubhouse. Speaker, Ben Pierce.

**ARCHERY**—Target shoots each Thursday, 7:30 p.m., ARA softball diamond.

**BRIDGE**—Regular play nights, Fridays, 7:30 p.m., ARA Clubhouse.

**CAMERA CLUB**—Meeting July 7, 7:30 p.m., Photo Arts Bldg., Balboa Park.

**CATALINA TRIP**—Weekend package of boat-bus transportation, lodging at St. Catherine Hotel, Catalina Island, July 26-28. \$27 per person. Reservations at employee services, Bldg. 8.

**CHORUS**—Rehearsals each Monday, 7:30 p.m., ARA Clubhouse.

**GARDEN CLUB**—Joint ARA-CRA club meets 7:30 p.m., July 3, Floral Assn. Bldg., Balboa Park.

**HI-FI/MUSIC**—"Scottsville Squirrel Barkers," in person, 8 p.m., tonight (June 26), ARA Clubhouse. Donation 75 cents per person.

**RADIO CLUB**—Meeting 7:30 p.m., July 3, ARA Clubhouse.

**REDUCED PRICE TICKETS**—Starlight's "Around the World in 80 Days," July 14. Tickets \$3 and \$2.65, employee services, Bldg. 8.

**SOFTBALL**—Representative team plays home games each Friday, 8 p.m., ARA diamond.

**SQUARE DANCING**—Astro Nauts "Summer Breeze" dance, 8-11 p.m., June 29, ARA Clubhouse. Information, Pat Hawkes, ext. 1230.

**TOASTMISTRESSES**—Serra Mesa Club meets 7:30 p.m., July 1, ARA Clubhouse.

**WATER SKIING**—Skiing every Saturday, Sunday, 10 a.m.-4 p.m., Crown Point, Mission Bay.

## Free Program Slated By ARA Hi-Fi Group

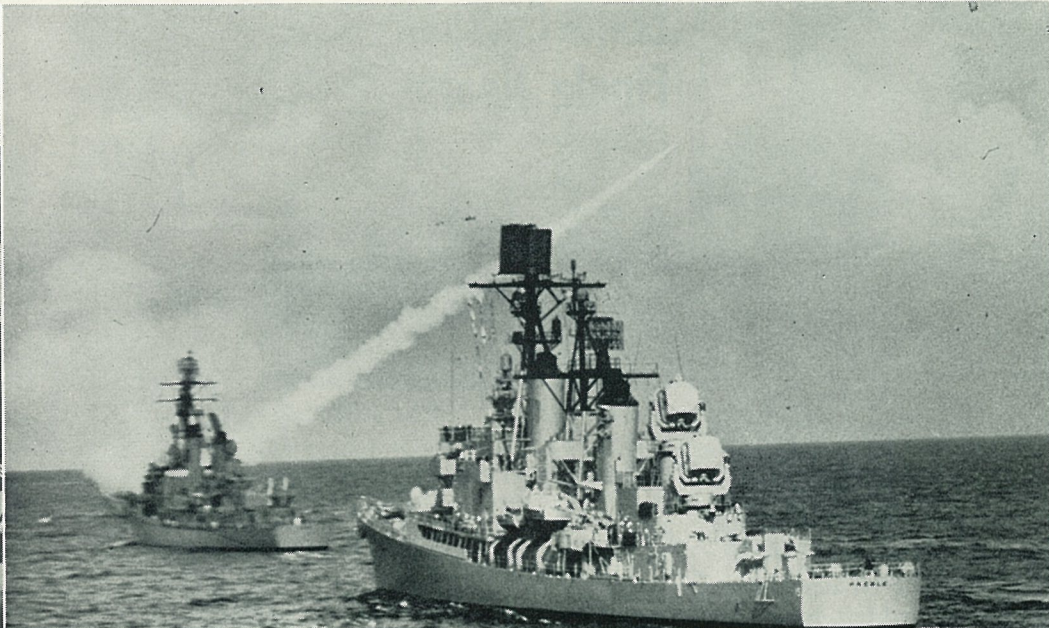
Teen-agers and fans of popular music are the special audience target of a free program arranged by ARA Hi-Fi/Music Club for 8 p.m., July 9 in ARA Clubhouse.

Guest speakers and performers at this session will be two former GD/Astro employees who launched the now-famous "Cascades" whose recording of "Rhythm of the Rain" has sold over 1.5 million copies. Singer Vanda Jenkins will be an added attraction, and records will be given as door prizes.





**FOR PRESIDENT**—Advanced Terrier and Tartar missiles produced by General Dynamics/Pomona scored perfect hits on jet drones during Navy's display of weapons for President Kennedy



recently. President watched missile firings from carrier Kitty Hawk's flight deck. Tartar missile is shown being launched from one of guided missile destroyers.

## Tartars, Terriers Fired In Navy Show For JFK

Spectacular performances by General Dynamics/Pomona-built Terrier and Tartar missiles were included in the Navy's show of strength for President Kennedy off the California coast earlier this month.

The surface-to-air missiles fired from the carrier Kitty Hawk, frigate Coontz and destroyer Berkeley "scored perfect hits on jet drones at approximately 15,000 feet," according to press reports.

The President watched the missile firings from the carrier's flight deck. With him were his various military and naval advisers.

Following the demonstrations, President Kennedy in a brief speech said he would return to Washington "with a renewed pride in being an American, a renewed confidence in being a citizen of the greatest republic

... guarded by the finest Army, Navy and Air Force in the world."

GD/Pomona's field operations and flight analysis personnel provided technical assistance for the Advanced Terrier and Tartar demonstrations and received a "well done" from RAdm. David Lambert, USN, commander of Cruiser-Destroyer Flotilla Nine.

"The supporting effort was considered to be a major contributing factor to a most successful operation," Admiral Lambert said in a message to GD/Pomona.

GD/Pomona representatives aboard ships for the demonstration included: Kitty Hawk, T. L. Deno; Columbus (flagship of Admiral Lambert), E. A. Bergum; Preble, C. V. Hill; Berkeley, J. R. Beesley and W. A. Dean; Hoel, J. E. Gilger.



**PROUD**—Maj. Gen. Ben I. Funk, commander, Space Systems Division, AFSC, accepts Group Achievement Award from President John F. Kennedy. Presented at White House, award was for "managing the development and launching of the Atlas booster used in the space flight missions of the United States in Project Mercury." Gen. Funk credited industry with key roles in making award possible. Astronaut Gordon Cooper is at President's left, Vice President Lyndon B. Johnson is at right.

## JFK Honors Teams Responsible For Atlas' Mercury Launch

Air Force Systems Command's Space Systems Division, commanded by Maj. Gen. Ben I. Funk, recently received a Group Achievement Award from President John F. Kennedy.

The award was presented at the White House. The accompanying scroll stated the award was for "managing the development and launching of the Atlas booster used in the space flight missions of the United States in Project Mercury."

General Funk said, "This extraordinary achievement is a credit to everyone concerned. Our SSD Mercury-Atlas management team, the 6555th Aerospace Test Wing, the Aerospace Corporation, and the many industries engaged in the program can all take great pride in placing Major Gordon Cooper and the other Mercury astronauts successfully in orbit."

Vice President Lyndon B. Johnson read the citation accompanying the award.

Following White House ceremonies, General Funk attended a joint session of Congress honoring Cooper and later the State Department luncheon for the same group.



"Sa-ay! You're a pretty good fisherman—I'll mention it to the next farmer who might want to hire you."

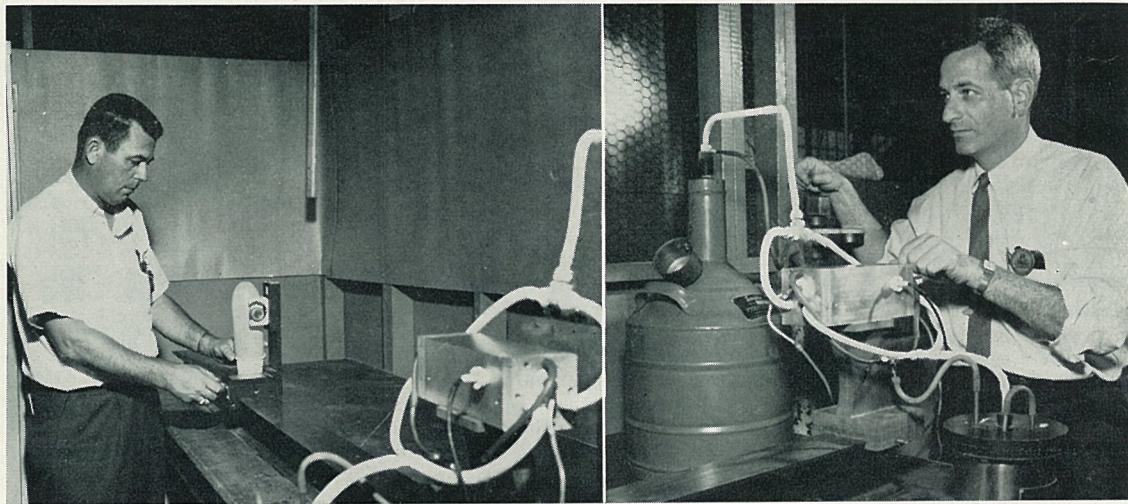
## As Usual, Dynamics Will Observe Fourth

Another one-day holiday is in store for General Dynamics people next week as they observe the Fourth of July.

Work will be suspended at all General Dynamics plants for Thursday only, except for necessary maintenance and security functions. Employees will report for work at usual shift times on Friday.

## Officer Students Briefed on Missiles

Twenty-one officer students attending the U.S. Navy's post-graduate school, Monterey, Calif., were June 13 visitors at GD/Pomona. The officers were briefed on Advanced Terrier, Tartar, Mauler and Redeye missile programs and toured production facilities.



**DIRECTED LIGHT BEAM**—In experiments at GD/Convair with Laser, device to produce high-power pure beam of light which may, eventually, revolutionize manufacturing methods, Charles Maikish, Dept. 23 (at left), sets up balloon target for beam which will travel from aluminum box-like container, Laser head, at right to be intercepted by lens and concentrated on specific point. In photo at right M. D. Weisinger, GD/Convair chief of manufacturing research and development, adjusts controls of cooling system. Note frost formed on tubes carrying liquid nitrogen for cooling of ruby, heart of Laser.

## GD/Convair's Laser Research Aimed At Fast Welding, Cutting Technique

A giant stride forward has been made in Laser research at General Dynamics/Convair with updating of the division's "pure" light beam device which may, some time in the future, replace conventional tools for fast welding and cutting of exotic materials.

Experimentation with the new method of amplifying light waves, known as Laser (Light Amplification by Stimulated Emission of Radiation) has been carried on at GD/Convair for more than a year under direction of M. D. Weisinger, chief of manufacturing research and development.

A unit with infinitely greater capabilities than the former experimental unit is now in operation in the manufacturing research laboratory. It was made possible by acquisition of two important components—a large synthetic ruby of flawless quality, 6½ inches long and half-inch in diameter, and a flash tube powerful enough to energize, or laser, the ruby.

Weisinger explained that the division's Laser efforts waited months for the "state of the art" to catch up. Only recently has a crystallizing process been perfected to produce high quality rubies of the size required to give out a pure shaft of light powerful enough for industrial uses.

The Laser is constructed about a ruby crystal set in light oscillation to give off a coherent, or straight, beam of visible red light. When focused on an object through a lens, it produces temperatures to 75,000 F. degrees, enough heat to vaporize any known material.

The beam would be capable of piercing any material regardless of properties, said Weisinger. It will be able to pierce holes of smaller diameter than ever before at amazing speed.

"As an industrial tool the Laser will find wide application in the field of microminiaturization of electronic components, particu-

larly in semi-conductors," he continued.

"Adaptation of the Laser beam to the welding process may provide, in years to come, a better means for joining exotic metals anticipated for rockets, missiles, supersonic aircraft, and other space vehicles. It does not require operation in a vacuum chamber, thereby reducing equipment and set-up costs.

"Laser's ability to create an extremely accurate 'line in space' shows great promise for optical tooling application. Hundreds of feet could be spanned by Laser, which could be operated by remote control, and tolerances maintained within millionths of an inch. Its application to large wing sections of a few hundred

feet, or its use in constructing giant missiles of the future, of a thousand feet or more in length, will aid in producing almost perfectly aligned assemblies."

Current research in GD/Convair laboratories is concentrating on increase of pulse rate of the Laser to produce a continuous output of the light beam, which would give an almost continuous action in cutting or welding.

"To achieve a more continuous light beam we are experimenting with a revolving drum with eight Xenon flash tubes which can be fired individually or in sequences of two, four, and eight," Weisinger said.

"After additional testing we will be able to determine and control the energy level and output required for welding and cutting."

GD/Convair's research team, which in addition to Weisinger included George Bartolomei, senior manufacturing development engineer, now at GD/Astro; Roger Beemer, also now at GD/Astro, who designed the electrical power installation; and Charles Maikish, Dept. 23 technician, were involved with one of the first Laser welding experiments in the country at Technical Research Laboratory, Syosset, Long Island.

Since then, research and experimentation in the revolutionary harnessing of light beams has been continued at GD/Convair at a minimum of expense and under austere conditions, stressed Weisinger. Very little material has been purchased for construction of the device and its electrical power supply and cooling system. Most of the components were designed and fabricated within the department from scrap material. The present stage of development, which would ordinarily cost as much as \$50,000, has been reached at a mere fraction of that amount.

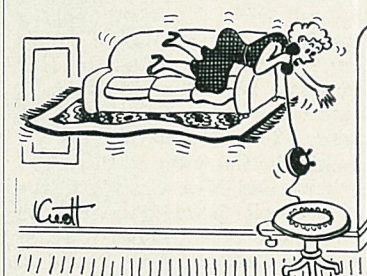
Other General Dynamics divisions have entered the field, working along similar lines in preliminary investigation and basic research.

## DYNAMICS QUALITY REPS GET TOGETHER

General Dynamics Corporation quality control working committee met earlier this month at GD/Astro with representatives of 10 divisions attending.

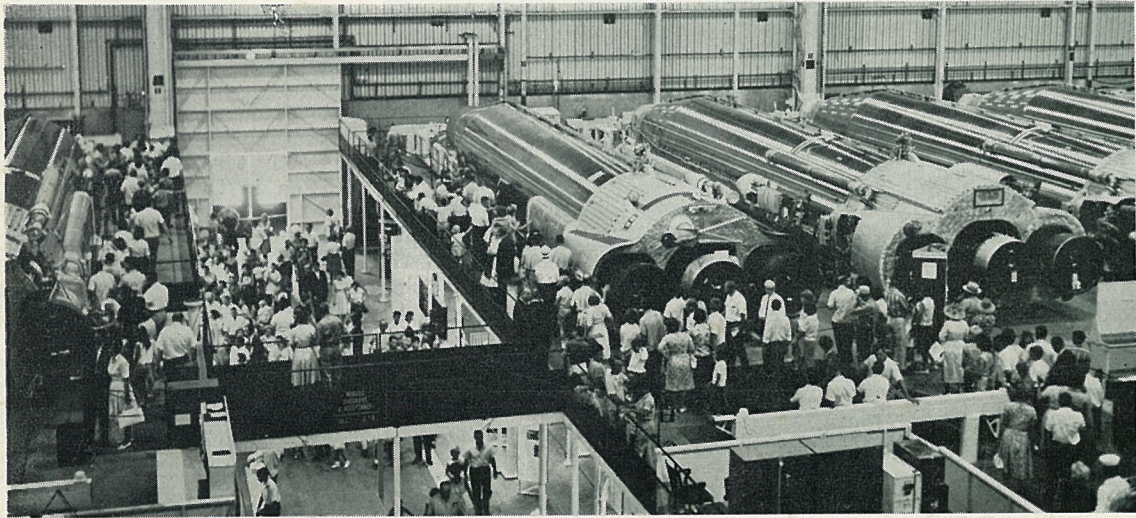
The group was greeted by L. I. Medlock, GD/Astro manager of quality control; and R. F. Martin, GD/Electronics; C. W. Bailey, GD/Pomona; and G. W. Turner, GD/Convair, moderated discussions during the two-day meeting.

Divisions represented included GD/Astronautics, General Atomic, Canadair Ltd., Convair, Electronics-Rochester, Electronics-San Diego, Electric Boat, Fort Worth, Liquid Carbonic, Material Service and Pomona.

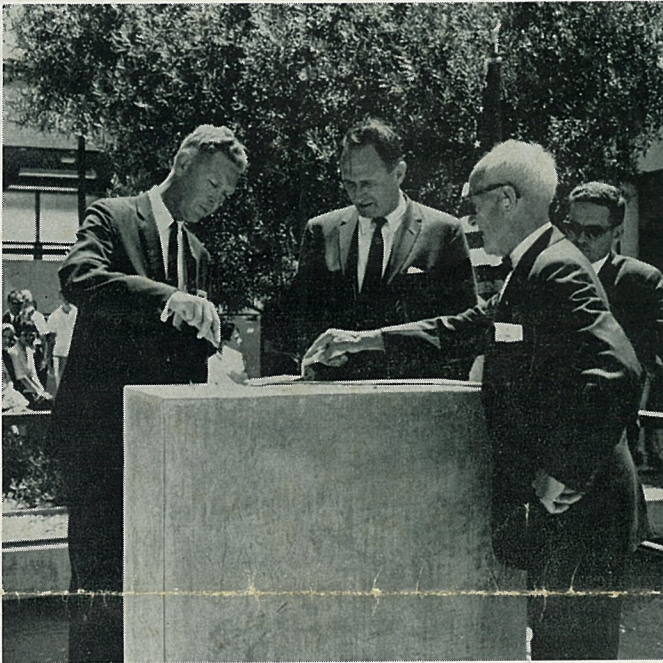


"Ajax Furniture? Are you sure that the rug I bought didn't come from India?"





FULL HOUSE—Lines queue up for first public showing of Atlas assembly line at Kearny Mesa.



CEREMONIES—At right above, J. R. Dempsey, GD/Astro president; Roger Lewis, General Dynamics president, and Maj. Gen. B. H. Foulois, USAF ret., seal time capsule. At left, Dempsey chats with Ann Marie Slysh, daughter of Dept. 581-3's Paul Slysh, with Dr. Abe Silverstein, Lewis Research Center director, and Ronald Rovenger, asst. project manager—field, Lewis Center, in background.

## Major Realignments Put in Effect For Engineering Organizations

Major realignments in General Dynamics/Astronautics institutional engineering organization were announced last week by Mortimer Rosenbaum, vice president-research, development and engineering.

The moves establish within the various technical disciplines a core of personnel to serve and give direction to new and present activities.

The new organization is reflected in corresponding appointments of engineering executives reporting to W. W. Withee, vice president-engineering.

Ernie Wade assumes the new title of chief engineer-electrical and electronics (Dept. 530); P. D. Ferrara, chief engineer-administration (Dept. 520); D. J. Peery,

chief engineer-structures (Dept. 557); Mike Dublin, chief engineer-flight mechanics (Dept. 559); and B. G. MacNabb, director-test engineering (Dept. 570).

Michael Dublin, now chief engineer-flight mechanics, has been

### Astro's President Honored at Lunch

GD/Astronautics President J. R. Dempsey was honored last week at a testimonial luncheon in the International Room, El Cortez Hotel.

Highlight of the affair, sponsored by Exchange Club of San Diego, was presentation to Dempsey of a "Book of Golden Deeds" containing letters of tribute from his friends and professional associates.

with the company since receiving an engineering degree from University of Michigan in 1939. In 1951 he was named chief of mechanics at GD/Convair, a post he held until joining GD/Astro in 1962.

His recent posts have included that of manager of technical development, assistant chief engineer-systems integration, and assistant chief engineer-design analysis, space launch vehicles project.

David J. Peery, chief engineer-structures, is a native of Linneus, Mo., and attended Central College and Missouri School of Mines from which he holds a bachelor of science degree (1934), and a degree in civil engineering (Continued on Page 2)

## Visitors Swarm To Open House

More than 91,100 persons helped General Dynamics/Astronautics celebrate Open House activities July 13.

Festivities marked the fifth anniversary of the dedication of Plant 71. Astro, the Air Force and National Aeronautics and Space Administration (NASA) shared the role of host.

Both Plants 71 and 19 were open to the public with many areas being viewed by outsiders for the first time.

Visitors arrived as early as 8 a.m., although gates did not open until 9. They continued to come in increasing numbers, reaching a peak around 1 p.m. when official ceremonies were held.

President J. R. Dempsey welcomed visitors and introduced top Air Force, government and civic officials.

Dr. Abe Silverstein, director of NASA's Lewis Research Center, lauded Astronautics and San Diego for contributions to national space goals.

"The key to accomplishments in our national space goals is to be found at Astronautics," Dr. Silverstein said. "We rely on your fullest dedication and concentration, the performance of every man and woman, to meet our established space goals."

General Dynamics Corporation President Roger Lewis reviewed Astro's progress over the past five years as the nation's first facility devoted exclusively to astronautics.

"We dedicated this plant to the advancement of man's knowledge of the universe," Lewis said. "Today we rededicate ourselves to this goal and pledge our efforts to the challenging tasks that lie ahead."

Maj. Gen. Osmond J. Ritland, deputy commander for Manned Space Flight, AFSC, told visitors the Atlas program has poured more than \$1 billion into San Diego's economy over the past years. He termed the Atlas a major factor today. He said it (Atlas) will serve further in the future.

Dignitaries joined with five-year-old Ann Marie Slysh, daughter of Paul Slysh (Dept. 581-3), in sealing predictions of national leaders on possible space accomplishments over the next 100 years. Forecasts were sealed in a special space-time capsule, now located permanently in front of Bldg. 2.

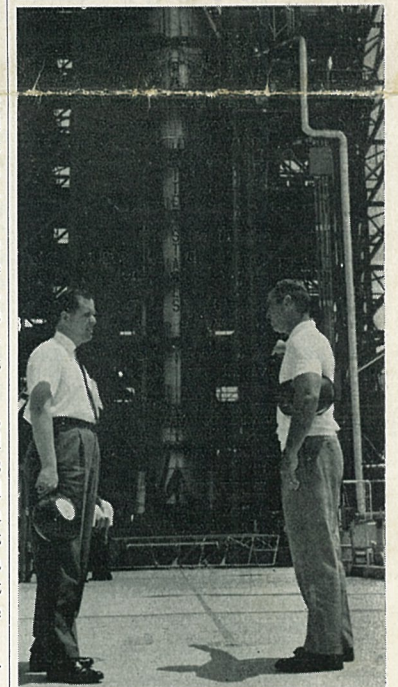
Almost every department and function at Astronautics got into the spirit of the Open House by

staging special displays, etc., of their efforts.

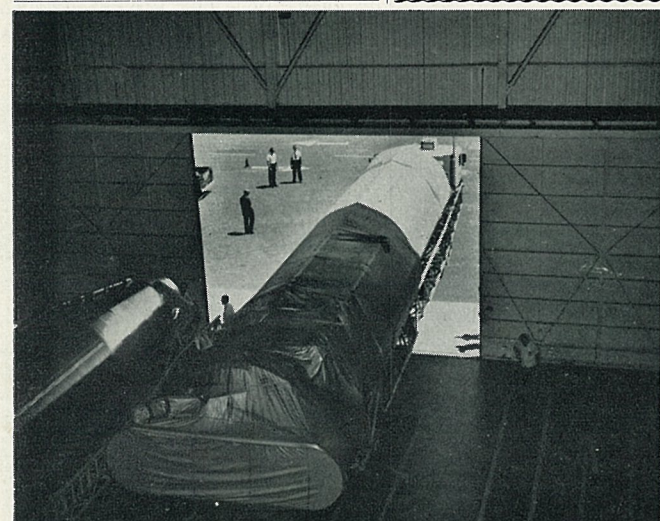
Naturally, there were favorites. Air Force astronauts on hand to sign autographs were swamped throughout the two-hour period they were available. Of particular interest to visitors were computers, life and space science displays and activities, tooling and fabrication areas, and Atlas and Centaur assembly areas, open for the first time.

Vending machines cranked out 8,000 ice cream bars, 14,500 soft drinks, plus 6,000 candy bars and other assorted items. Food service crews sold 3,800 hamburgers, 2,520 steak sandwiches, 1,500 hot dogs, 1,000 ham sandwiches, plus 5,194 soft drinks.

Astronautics still photographers recorded the event. Because employees have voiced an interest in buying photographs, special arrangements have been completed by ARA. Strip proofs of Open House photographs have been turned over to ARA sales office (Bldg. 8). Employees may review them and arrange to purchase 8 x 10-inch glossy prints for 60 cents each through normal sales arrangements.



CAPE VISIT — Grant Hansen, left, vice president and program director-Centaur, and Roger Lynch, operations manager-Centaur at Atlantic Missile Range, pause in tour before launch tower at Complex 36A. Lynch points out Atlas/Centaur launch vehicle slated for launch this year.



CAPE BOUND—At left is Atlas booster for Centaur leaving GD/Astronautics factory building in "roll out" for final checks day before departing for Cape Canaveral. At right S. E. Johnston, Air Force traffic manager, briefs transport crew

before overland trek. Center: Atlas convoy is under way on Highway 80, east of El Cajon. Atlas is destined ultimately for coupling with Centaur vehicle for launch from Cape Canaveral.



## Mercury-Atlas Reliability Covered in Workshop Talks

Some 300 representatives of 46 leading aerospace firms and government missile and space agencies gathered earlier this month in San Diego for discussions of reliability in the Mercury-Atlas program.

Co-sponsored by General Dynamics/Astronautics, the Air Force and National Aeronautics and Space Administration (NASA), the workshop was aimed at analysis of performance achievements in Project Mercury, with a view to applying lessons learned in that program to future space efforts.

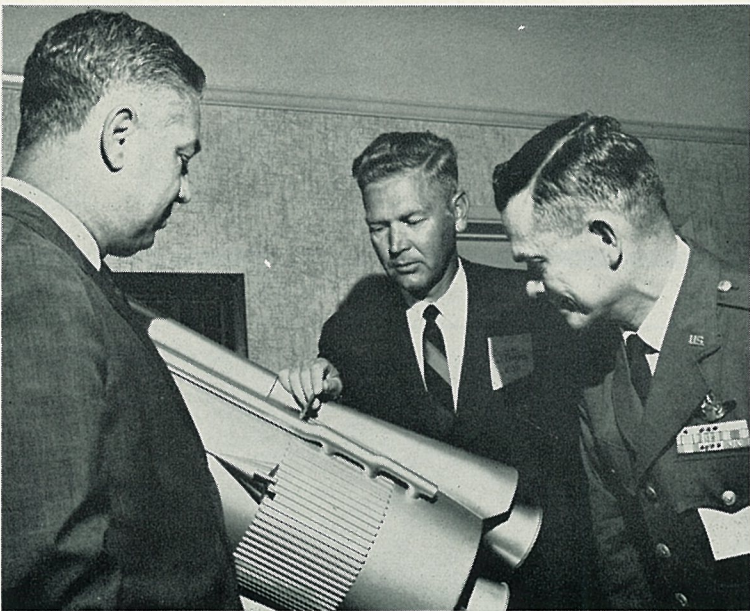
Key spokesmen for the sponsoring organizations were President

J. R. Dempsey of GD/Astro; Walter C. Williams, operations director for Project Mercury and the forthcoming Projects Gemini and Apollo, NASA; and Col. Robert Hoffman, deputy commander-engineering, Air Force Space Systems Division.

The workshop covered management, design, manufacture and test phases of Atlas participation in the man-in-space program, with particular emphasis on reliability.

Dempsey noted that GD/Astro has maintained an "open door" policy in sharing the division's knowledge in producing and rating manned space flight launch vehicles.

"Many companies have sent representatives to study our procedures and techniques," he said. "We feel, however, that the workshop was very effective in providing broad and swift dissemination of this information."



WORKSHOP SUBJECT—Model of Mercury Atlas launch vehicle holds attention of NASA's Walter C. Williams, left, GD/Astro President J. R. Dempsey, and Col. Robert Hoffman, Air Force SSD, during recent reliability workshop at San Diego.

## Major Realignments Affect Astro Engineering Structure



From left: Mike Dublin, D. L. Fagan, B. G. MacNabb, K. E. Newton.

(Continued from Page 1)

(1938). From University of Michigan he earned a master of science degree in engineering (1935) and a doctor's degree (1942).

He has served in faculty posts at Pennsylvania State University, University of Michigan and Carnegie Institute of Technology, and held positions with Curtiss-Wright, McDonnell and North American Aviation.

He joined GD/General Atomic in 1959 and moved to GD/Astro in 1962 as engineering staff specialist-Centaur.

The newly established test engineering organization under B. G. MacNabb provides test program integration by bringing together all test efforts under a director.

MacNabb was born in Gary, Ind., educated at Rose Polytechnic Institute, Terre Haute, Ind., and Illinois Institute of Technology, Chicago. Prior to joining GD/Astro's parent Convair division in 1955 he held executive posts with Alloy Engineering and Casting Co., Champaign, Ill., and Cambridge Corp., Denver, Colo.

He joined the Model 7 program from which Atlas grew in 1956 when he was named manager of Cape Canaveral operations. He remained there as operations director until his recent appointment.

Moving into MacNabb's former Florida post is K. E. Newton, previously director of GD/Astro operations at Vandenberg AFB (PMR). Assuming Newton's duties will be D. L. Fagan (formerly manager of test and launch operations-Atlas weapons systems), with the title of director-PMR operations.

Newton holds a bachelor of science degree in electrical engineering earned at Southern Methodist University. He is a native of Pennsylvania where he attended Geneva College. He joined Convair in 1955, and in 1957 moved to GD/Astro's Sycamore Canyon Test Site as test conductor and later chief test conductor there, and subsequently

at Cape Canaveral. He assumed the senior GD/Astro post at Vandenberg AFB in 1962.

Fagan is another Atlas veteran, joining Convair in 1955 from a test engineering post with General Electric. He has served at Edwards AFB (now ERS) and Vandenberg AFB in test conductor capacities. He is a graduate of Miami University, Oxford, Ohio, with additional studies at University of Cincinnati.

Both Newton and Fagan now report to MacNabb, as do W. F. Chana and P. T. Gardner, who continue in assignments as manager, Sycamore operations, and chief engineer-test, engineering test facilities, respectively.

The organization under MacNabb will provide management of field test programs, coordination in establishing field test programs and flight plans, as well as on-site support of research and development test sites.

In addition, it will provide services to both Atlantic and Pacific Missile Range operations, and give functional direction to project organizations at these locations.

Realigned, in addition, are functions under P. D. Ferrara, chief engineer-administration. W. T. Rieff has been named chief, engineering liaison, and R. A. Taylor, chief, materials and parts analysis.

Also reporting to Ferrara are T. A. Billings, chief, data documentation; D. H. McCoy, chief, administrative services; and A. J. Gillette, acting chief, planning and estimating.

Reallocation of tasks to Depts. 101 and 158 will provide increased scientific programing support to GD/Astro's technical elements.

H. C. Courington continues as manager, configuration management (Dept. 151).

## WIFE OF ASTRO MAN IN NEED OF BLOOD

General Dynamics/Astronautics friends of Herbert Clark (Dept. 377-1) are engaged in a concentrated effort to secure 30 pints of blood needed by Mrs. Jane Clark prior to heart surgery.

Mrs. Clark is scheduled for surgery Aug. 24 at Mayo Clinic, Rochester, Minn., to replace both the aortic and mitral valves of her heart. At least 35 pints of blood will be required.

The Clarks may draw a maximum five pints from General Dynamics/Astronautics blood credit at the San Diego Blood Bank.

Employees desiring to donate may go to the Blood Bank, 3405 Fourth Ave., San Diego and donate blood, asking that it be designated for Jane E. Clark for transfer to Rochester, Minn.

## Data Process Streamlined

New organizational alignments in General Dynamics/Astronautics management systems were announced last month by President J. R. Dempsey, with appointment of four managers reporting to J. H. Johnson, director of management systems.

Three-fold intent of the changes is to



C. R. Walker Jr.



Art Andress

C. E. Diesen

place additional emphasis on GD/Astro's increasingly complex and demanding scientific and business system programing and data processing; to effect improved operating efficiencies; and to consolidate related functions.

Joining management systems as manager of division systems (Dept. 170) is C. R. Walker Jr., formerly manager of programing and control, contracts department.

Under the new alignment, division systems under Walker will encompass tasks of organization and systems, all business data programing, as well as program planning and control—providing for more integrated systems' development with related planning and control activities.

A. E. Andress, previously data systems manager, has become manager of data processing operations (Dept. 101), which will operate all business and scientific digital computers and related equipment to appropriate programing.

In addition, this department will be responsible for analyses and recommendations for new data processing equipment and accomplish related activities.

C. E. Diesen is now manager, scientific programing and analysis (Dept. 158), a change from his earlier post as manager of data processing.

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## MGT. CLUB PLANNING 'BASEBALL NIGHT'

GD/Astronautics Management Club members and their families will gather at Westgate Park Aug. 2 for the group's annual "Baseball Night," hosted this year by Vice President E. D. Bryant's operations department.

Event will open with a picnic dinner from 6 to 7:30 p.m., featuring a choice of barbecued ham or beef, or fish. Roving Latin "troubadors" will entertain.

By game time (8 p.m.) the group will be settled in reserved box seats to see San Diego's Padres meet the Dallas Texans.

Other features include entertainment by professional clowns, Doyle and Happy, and an opportunity for youngsters to win autographed baseballs.

Price for the "family night" package of picnic dinner plus box seat is \$2.25 for adults, and \$1.75 for children.

Tickets are now available from Management Club "Boosters" throughout GD/Astro facilities. Members unable to locate a "Booster" in their area have been asked to contact Maynard Bjorstrom, ext. 1053, Plant 71.

Arrangements for the affair are handled by a committee of Claude Campbell, Jim Evans and John Henzler.

## Log Book Entries Service Emblems

**MAIN PLANT**

Service emblems due during the period July 16 through July 31.

Twenty-five-year: Dept. 715-0, B. L. Wolfe.

Twenty-year: Dept. 290-1, E. E. Chavez; Dept. 682-2, Tony Finaro; Dept. 718-0, W. D. White; Dept. 733-0, C. W. Maxfield; Dept. 759-0, J. W. Magnuson; Dept. 953-3, J. W. Kieff.

Fifteen-year: Dept. 140-3, C. F. Clark; Dept. 382-1, M. F. Castro; Dept. 673-0, O. R. Rathke; Dept. 756-0, W. A. Swedfeger Jr.; Dept. 781-0, Dorothy P. Hurdlow; Dept. 831-1, C. G. Jerome; Dept. 960-3, Fred Hahn.

Ten-year: Dept. 143-4, Willis Harris; Dept. 170-0, M. M. Mrvichin; Dept. 171-0, Mary M. Warren; Dept. 195-0, Ada J. Krieger; Dept. 250-5, H. E. Lero; Dept. 322, J. K. Bishop, R. A. Izaarelli; Dept. 330-2, A. J. Seifert; Dept. 336-6, Clarence M. Flippin; Dept. 362-3, C. V. Barger; Dept. 370-1, L. C. Erxleben; Dept. 377-1, C. M. Durst Jr.; Dept. 382-3, W. P. Small.

Dept. 401-4, J. B. Stevens; Dept. 402-1, P. T. Corrao; Dept. 403-3, C. W. Mattison; Dept. 404-1, G. W. Littlejohn, R. T. Segur; Dept. 451-0, H. B. Barrett, J. G. Fluharty, C. F. Roderick; Dept. 454-0, L. E. Bellair, D. V. Fleming; Dept. 462-0, Samuel Kelley, C. T. Tyree; Dept. 480-0, G. D. Purkerson.

Dept. 527-5, J. H. Price; Dept. 573-2, N. D. York; Dept. 591-5, Vasilios Horreftis; Dept. 671-1, Mary K. Christian; Dept. 715-0, H. C. Leoneini; Dept. 756-0, H. A. Ringhand; Dept. 759-0, W. L. Worthington; Dept. 782-0, E. C. Felix; Dept. 835, J. W. Mullen, Lincoln Parrish Jr.

## Births

**MAIN PLANT**

LANGE—Daughter, Nancy Caroline, 8 lbs., 4 oz., born June 18 to Mr. and Mrs. Roy O. Lange, Dept. 963-6.

## Deaths

**MAIN PLANT**

HARRIS—David, Dept. 322-1. Died June 26. Survived by mother, Mrs. Charlotte Harris.

MILLER—Donald M., Dept. 336-3. Died July 13. Survived by wife, Lois, two sons, daughter.

SHARKEY—James P., Dept. 756. Died July 13. Survived by wife, Lucy, and daughter.

SONNTAG—Alfred, Dept. 731. Died July 11. Survived by daughter, Carolyn.

STOCKWELL—Edward J., Dept. 756. Died June 29. Survived by wife, Shirley, two sons, daughter.

**EDWARD RS**

GILBERT—Daniel E., Dept. 975-3. Died July 5. Survived by wife, Claudette, four children.

## Papers Presented

BRADLEY—R. C., Dept. 527-1. "Large Electroformed Bulkheads for Space Vehicles," San Diego branch, Electroplaters Society, July 8.

## Retirements

**MAIN PLANT**

PIERCE—Harry J., Dept. 250-6. Seniority date, Sept. 23, 1935. Retired April 29.

## Personals

Our sincere thanks for the many kindnesses, floral arrangements and contributions to St. Alban's Memorial Fund upon the death of my wife, Lois.

Clarence A. Gerber, Dept. 301 and daughter, Nancy

\*\*\*

My sincere thanks for the many kindnesses shown me on the death of my father.

Morton Kantor, Dept. 504-3.

## General Dynamics NEWS

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"What do you mean—shave or haircut?"



## All Divisions Send Electro Dynamic Help

All General Dynamics divisions quickly came to the assistance of Electro Dynamic in its hour of need. Machine tools were shipped by Canadair, Convair and Stromberg-Carlson, and the U. S. Navy also sent tools. The Corporate Office in New York contributed office furniture and equipment.

The prompt assistance from sister divisions, as well as offers from scores of business concerns in the Bayonne area, was given credit for much of the rapidity which marked the division's come-back.

## ELECTRO DYNAMIC MAKES COME-BACK FROM NEW PLANT

Electro Dynamic Division of General Dynamics, whose Bayonne, N. J., plant was destroyed by fire April 20, is now "back in business," operating from a new facility 16 miles away at Avenel, N. J.

The new plant at Avenel, formerly occupied by Art Metal Corp., provides 350,000 sq. ft. of working space, approximately 30 per cent more than the old plant at Bayonne. The new plant address is 150 Avenel St. The phone number is 636-9100, area code 201.

Within a week after the fire, more than 90 per cent of all orders had been reconstructed and all customers contacted at least once. An inventory of motors in field warehouses helped maintain the flow to customers.

Navy Bureau of Ships officials opened files to E. D. representatives the first working day after the fire and reproduction of plans, drawings and correspondence, to replace files destroyed in the blaze, began at once. Navy production priorities were being established at the same time. Meanwhile, Electric Boat Division also was supplying drawings for priority items.

Critical Polaris submarine motors were first on the priority list. On April 30 crews were given six weeks to produce the first submarine motor. The first motor was shipped two days ahead of deadline.

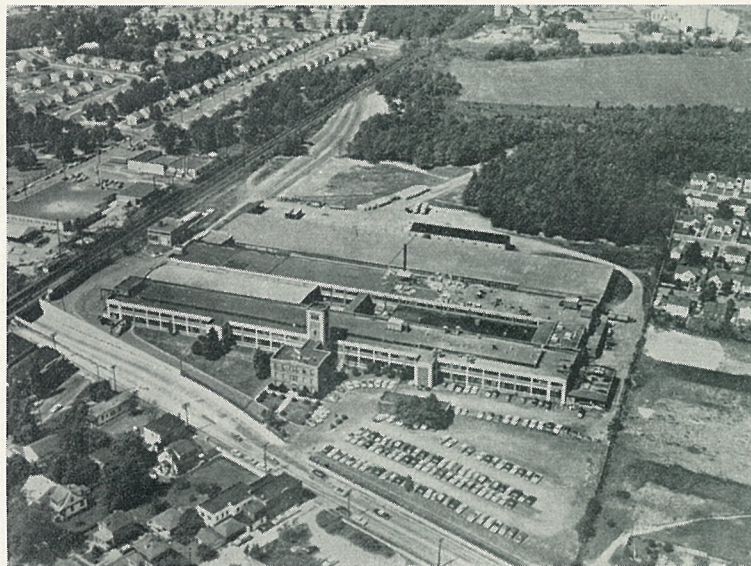
"Shock mounts needed for shipping the first motor were flown in from E.B. at 2 in the morning . . . bearings with a normal lead time of 40 weeks somehow appeared on schedule . . .

"There has been no delay in the Polaris or attack class submarine building program, thanks to this recovery program," a division publication reported.

"These results could be accomplished only by people of the caliber and dedication that we feel is General Dynamics' greatest asset," Algie A. Hendrix, Dynamics vice president-industrial relations, commented. "We are proud of the progress to date and confident of E.D.'s ability to support President Roger Lewis' statement following this fire that 'all commitments to customers will be met with a minimum of delay.'"

R. B. Carey Jr., E.D. president, added:

"I was confident that this E.D. group could accomplish the task of recreating a business. The results, however, have exceeded my most optimistic hopes."



NEW FACILITY—Aerial view shows new plant at Avenel, N.J., which has been occupied by Electro Dynamic Division. Former plant, at Bayonne, N.J., was destroyed by fire.

## Four New Office Managers Named to Key Dynamics Posts

New managers were appointed recently to General Dynamics field offices.

George J. Vila is in charge at the newly established Cleveland Office; E. A. Reynolds is manager at the Omaha Office; A. S. Witchell Jr. heads the Langley Field (Va.) Office; while James Walden Jr. is in charge at the Sacramento (Calif.) Office.

Vila, who has been with the company since 1940, had been in the Washington Office for the past 11 years before transfer to

Douglas. Two years later he was a member of an engineering expedition to Russia to assist in PBY manufacture. After a period as project engineer at Vultee's Downey Field, he was chief project engineer at the Allentown division during war days.

Witchell, a 1939 graduate of Texas A & M, was an Air Force pilot in World War II and joined the company in 1947 at Fort Worth as a flight captain. He was named chief pilot in 1954 and later was product support base manager. He is a graduate of the Air Force Experimental Test Pilot School as well as the AF Engineering School (now the AF Institute of Technology). Witchell made many of the early test flights on the B-58. He has logged more than 7,000 flight hours, more than half in test flying new military aircraft. At Langley, Witchell will be dealing primarily with the Langley Research Center, operated by NASA, and with Headquarters, Tactical Air Command.

Walden attended Baylor University and joined the company at Fort Worth in 1950, going to the Dayton Office the following year and returning to Texas in 1954 to head the San Antonio Office. He is a former mayor of El Paso. At Sacramento Walden will be dealing primarily with Air Materiel Area Command, which will have complete logistic support responsibility for the F-111, and with NASA's Ames Research Center.



E. A. Reynolds George J. Vila



James Walden A. S. Witchell

Cleveland where NASA's Lewis Research Center is located. The Center has authority over the Atlas-Agena and Atlas-Centaur programs in which GD/Astronautics is involved. A 1940 graduate of University of Florida with a degree in mechanical engineering, Vila held various engineering posts before assignment to Washington in 1952. Since 1959 he has been responsible for liaison with NASA.

Reynolds, formerly head of GD/Astro's long range planning and since 1958 manager of Astro's product support department (involving support for the Atlas missile after delivery, spares provisioning, service and field engineering etc.) joined Consolidated Aircraft in 1935 as a group engineer after seven years with

## Navy Funds Continued For GETOL Research

General Dynamics/Convair will continue engineering studies on a Ground Effect Takeoff and Landing (GETOL) airplane under a \$128,000 contract awarded by the Bureau of Naval Weapons in Washington, D. C., it was announced recently.

The study contract is part of a long-range program intended eventually to ascertain the effectiveness and economy of utilizing the GETOL airplane principle.

A GETOL airplane would be supported on a ground effect air cushion during vertical takeoff (or landing) and during acceleration over an unimproved land or water surface. It would then cruise conventionally.

Under the contract, GD/Convair will conduct seven months of static testing with different planform models to determine the configuration with the best inherent stability and control characteristics while in the ground effect mode.

The tests to determine the models' reaction both in and out of ground effect will be conducted at a special GETOL static testing facility adjacent to the company's low speed wind tunnel.

GD/Convair has already studied air-moving methods and established design criteria for the

complex ducting required to produce the cushion of air under the plane. Other GETOL studies conducted by GD/Convair during the past five years have included both wind tunnel and hydrodynamic evaluations with models as well as extensive analytical work.



SCHEDULE CHECK—Phil Ward, GD/Convair senior requirements engineer—GETOL, and D. S. Oesterle, predesign project engineer, look over schedule set up for GETOL development and testing.

## Operators Sing Praises Of GD/Convair Planes

"General Dynamics/Convair's reputation of 'best engineered and best constructed' aircraft still stands!"

That was the summation in a nutshell of the mass of information and expressions of opinion gleaned from Convair 880 and 990 airline operators all over the world during the latest tour of R. L. Runnalls in his capacity as GD/Convair airline performance engineer.

"The reputation of the Convair 880 and 990 series aircraft has advanced steadily," said Runnalls after a recent six-week trip which took him around the world. This was his second such complete inspection of Convair jet transports in operation, and third trip with Far Eastern operators.

"The Convair 990A is steadily proving itself to be the finest engineering example of high subsonic speed transportation. In one airline representative's opinion, the 990A may well become the No. 1 money-maker of the entire contemporary jet fleet if its full potential performance capabilities are eventually utilized."

Runnalls checked with Japan Air Lines, Civil Air Transport, Cathay Pacific Airlines, Swissair, and American Airlines on his return to New York. Then, joined by L. J. Bordelon, chief of service engineering, he took part in the annual Trans World Airlines "line audit" of 880s on domestic routes.

"This trip was particularly heart-warming because it disclosed upward spiraling reliability of the 880M aircraft in the Orient, the elation of SAS and Swissair personnel with the converted 990A aircraft, and the devoted respect of TWA crewmen for the 880," Runnalls reported.

Landing in a JAL 880M on arrival at Tokyo he had the thrill of seeing the craft perform the way it is advertised. "We achieved a notable first for a JAL 880M operation upon arrival in Tokyo when crosswinds on the main jet runway were above limits and we were required to land on the short (just over 5,000 ft.) runway. This operation is not possible for many other jet operations but was an easy task for the 880M."

And, on the TWA "line audit" Runnalls, who flew 880 routes to observe flight operations, and Bordelon, who reviewed maintenance activities at New York, Chicago, Los Angeles, found that:

"Next to family and country, TWA crewmen like the 880 best!"

During the 11-day evaluation of TWA operations, sponsored by the airline itself, the two GD/Convair men were part of a group from other involved companies, such as Boeing, Lockheed, General Electric, Pratt and Whitney, Wright Aero, who scattered over the entire TWA route structure. Prime purpose of the yearly audit is to get true eye-witness reports from specialized observers on flight operations, ground operations, passenger service functions, maintenance practices.

According to Runnalls, the Convair 880 superlatives were described in terms of reliability (currently near first place in the TWA total fleet), flight characteristics, performance, and structural ruggedness.

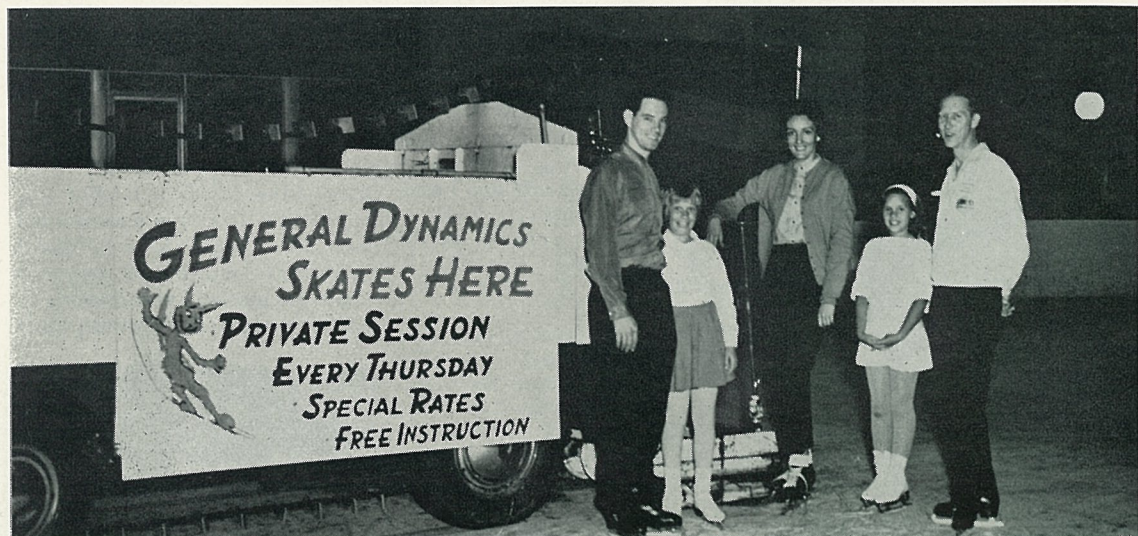
"The overall operation of the Convair 880 by TWA crews continues to represent the finest reflection of good training and good attained efficiency that has been my pleasure to witness with any aircraft in the hands of any major air carrier."



WIDE-RANGING CONVAIRS—Convair 880 and 990 jet transports touch down at airports in all parts of world, as shown by shots taken by R. L. Runnalls, GD/Convair airline performance engineer, on recent review of operations around

globe. In center is Swissair 990A at Geneva, Switzerland; at far right, JAL 880M stops at Honolulu on delivery flight to Tokyo; and at left, TWA 880 is snapped unloading at O'Hare Field, Chicago, Ill.





**FAVORED**—Joint CRA-ARA Ice Skating Club is "pet" customer of Mission Valley Ice Plaza which advertises fact on its Zamboni ice conditioner. Pictured are Instructor Dave Pencosky, left; Marcelle Prokop, daughter of GD/Convair's Mary Prokop, Dept. 27-6; Barbara Gilliland, GD/Astro Dept. 963-4, club president, and daughter, Kim, and ARA Commissioner Bud Davies.

## Jack Swank Wins Two Events In ARA-CRA Gun Club Shoot

CRA Commissioner Jack Swank (GD/Electronics) shot himself to first place in two events at the CRA-ARA Gun Club's July 14 ATA registered trapshoot at Gillespie Field Range.

Forty-eight marksmen vied for the silver service trophies in soaring temperatures which neared 100 degrees and sent gunmen to the water buckets to cool off their gun barrels.

Swank won Class A in the 16-yd. event with a 93 and took the 18-21-yd. handicap event with another 93.

Class B winner in the 16-yd. competition was Art Carey, 96. John Beamer of Astro won the shoot-off to break a 96-score tie with L. P. Johnson in Class C. Don Cost of Aetna Insurance won Class D with 93.

Carey shot a score of 84 to

win the 22-27-yd. handicap.

W. U. Gatterman of Astro and Ellis Rhodes tied at 81s in the doubles event with Gatterman winning the shoot-off.

High lady for the day was Lois Smith with a score of 91.

A Troy-type trapshoot is scheduled for this Friday evening (July 26) at 7:30 p.m. at the CRA range. A regular club shoot will be held Sunday (Aug. 4).



**ONE VOTE HERE**—Lovely Sandra Marie Thies, daughter of Astronautics' Evelyn McPhail (Dept. 836-12), was semi-finalist in annual Miss North Island contest. Pert Clairemont high graduate is 17, plans career in nursing.

## Garden Show Set for Aug. 11

Commissioners Everett Henderson (ARA) and Gene Zimmerman (CRA) are making final arrangements for the joint ARA-CRA Garden Club summer show to be held Aug. 11 in Balboa Park's Floral Association Bldg.

Slated as the "biggest yet" the show will draw entries in five divisions from among the club's 300 members and other GD/Astro, GD/Convair and GD/E employees.

The show is planned so that almost any General Dynamics gardener may display the best of almost anything he has produced. Divisions include dahlias, citrus and deciduous fruits, vegetables, arrangements and corsages, plus a special children's class.

"Best of Show" awards will be given in 13 categories.

There is no entry fee, and gardeners may enroll their produce by bringing it to the Floral Association Bldg. between 7 and 11 a.m. on the day of the show. Judging starts at 11, with doors open to the public from 1 to 6 p.m.

## Skaters Open Membership

The joint CRA-ARA Ice Skating Club is now accepting new members from among GD/Astro, GD/Convair and GD/E employees and their families.

For a fee of \$1 per family per year, the club offers weekly private skating sessions, free instruction, and reduced admission prices.

The group meets each Thursday at 6:30 p.m., Mission Valley Ice Plaza, and has exclusive use of the rink until 8 p.m. Members may continue to skate with the general public until 10 p.m. at no additional charge.

Up-coming special club activities will include a contest to design a club emblem, and a "Summer Weekend at Big Bear Lake" to be held in September.

## Murray Bass Named To Rochester Post

Murray T. Bass has been appointed director of industrial relations for Stromberg-Carlson division of General Dynamics Corporation at Rochester, N. Y.

Bass succeeds Walter Black who has transferred to GD/Astronautics as chief of administrative analysis and operational control.

Formerly wage and salary administrator at Rochester, Bass previously had held various industrial relations posts at GD/Fort Worth. He joined the company at Fort Worth in 1954.

## Radiation Shielding Course Offered

General Dynamics men interested in a ten-week course in radiation shielding to be given at General Atomic this fall by San Diego Section of the American Nuclear Society are asked to contact B. A. Engholm of General Atomic.

A tentative outline of weekly lectures includes such topics as nuclear radiation and its effects, elementary shielding analysis, neutron and gamma attenuation, application of machine methods to special problems in shielding, effect of shield design upon plant design, typical overall shield analysis and design.

An idea of the preferred day of the week, in order to make the scheduling most convenient to the majority, is needed from prospective attendees. Engholm may be reached at the General Atomic facility, Room TO-255.

## Astro Players Cast In "Heiress" Roles

Casting is complete and rehearsals are well under way for ARA Astro Players production of the drama, "The Heiress." It will be staged at 8:30 p.m., Aug. 8-10, 16, 17, 23, 24 in ARA Clubhouse auditorium.

## Save Materials—Don't Throw Your Job Away

### Relics of Past

## Collection of Pins, Emblems Traces Long Convair History

History of General Dynamics/Convair division, and its antecedents, was traced through nearly 40 years by the pins, medals, and emblems gathered together for the CRA Coin Club's unique display which took second place at the San Diego County Fair.

Thirty-five present and former GD/Convair employees answered the call for specific items and information to make possible the exhibit. It proved one of the most popular numismatic exhibits at Del Mar, said John Barrett of GD/Electronics, club president, who headed the CRA Coin Club group manning the section on July 6.

George Stewart of GD/Convair Dept. 6, display chairman, spent weeks collecting the 87 different items and compiling the accompanying history from the time Consolidated Aircraft was founded by Maj. Reuben Fleet in 1923.

Included were service pins dating back to Sept. 18, 1939; two- and five-year pins from Vultee Aircraft; others from Consolidated Aircraft and Consolidated Vultee. Several old-timers donated their entire collection of personal service emblems which covered the entire range of years spent with Convair and its predecessors.

Pins commemorating first flights of specific planes included such rare specimens as ones marking the V-72 dive bomber; B-36, B-24, PB-5 Catalina, PB-2Y-3 patrol bomber (in the form of a locket), down through the gamut to the present-day 880 and 990 jet transports.

A pilot's pin from Consairways, transpacific airline operated during World War II, was shown. Later models were pins with diamond settings given to the six crew members of the first 880 and 990 flights and similar pins with gold "O's" which went, at the same time, to ground crews.

Two coin-type medals struck at Convair were on display. One, bearing a likeness of the F-106A, was made for the 1956 GD/Convair open house, and the other was a souvenir for the opening of Astronautics' Kearny Mesa plant in 1958. Both medals were made, one at a time, on a punch press at Plant 2. Fifteen thousand of each were turned out in aluminum and 12 of each kind in brass. One of the brass specimens was located for the CRA display.

Other unusual pins, long out of date, were of World War II vintage—those awarded for purchase of War Bonds and Savings Bonds; Army and Navy "E" for Excellence pins; and a Civil Defense Instructor's pin.

A gold letter seal used during 1953 to observe the company's 30th anniversary was shown. A lead proof coin, struck by GD/Convair's CRA for the Pomona

division's coin club was another unique item.

Other pins and emblems were those connected with the company's Employee Suggestion and Cost Improvement Proposal programs; Consolidated and Convair Recreation Associations; Management Clubs; and other organizations, including the Vultee Masonic Lodge.

Many of the contributors have given their items to the Coin Club to keep for future displays, or perhaps, a permanent exhibit sometime in the future, said Stewart. And, if anyone noticed missing items which should fill in some of the gaps of history, he is urged to contact Stewart at any time, evenings, on his home phone, 277-8636.

A list of owners of items and information gathered for the display will be kept on file so that similar exhibits can be arranged with less research.

## Winners Announced In Card Club Play

Frank Westphal and S. J. Johnson were north-south winners, and Mr. and Mrs. Wayne Evans, east-west, during ARA Bridge Club's regular play night, July 5.

The following week (July 12), two sections of play were arranged with Bob McNutt and Jerry Jaminet (N-S) and Gus Delaney and Eve Leasure (E-W) winning in section A.

Section B winners were Mr. and Mrs. C. A. Miller (N-S) and Francys Darr and Fredrica Combs (E-W).

The group plays each Friday at 7:30 p.m. in ARA Clubhouse.

## Paul Grubl to Head Valley Mgt. Assn.

EDWARDS RS—Paul Grubl, president, heads a new slate of officers installed last month by the General Dynamics Antelope Valley Management Association.

Other officers are Phil Ayer, vice president; Doug Wheeler, secretary; and Glenn Baxter, treasurer.

Named to the board of directors were Roy Kurtzman, Clark Bush and Larry Failor.

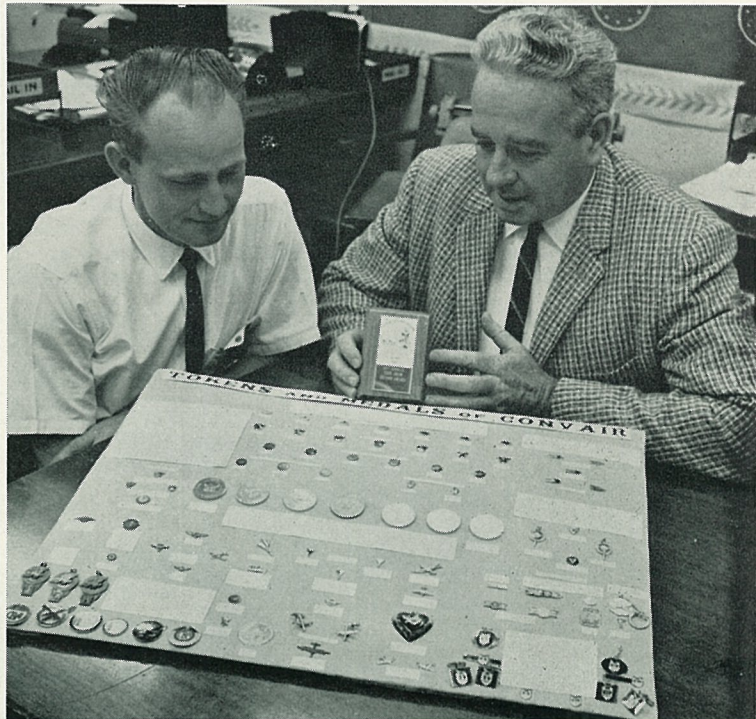
Installation was June 21 at the Oasis Bowl in Palmdale. D. M. Montgomery, Zone "A" director for National Management Association, was installing officer.

## Convair, Astro Set Salvage Schedule

Schedule at GD/Convair and GD/Astro salvage yards for the next four Saturdays is:

GD/Astro—July 27, Aug. 10.

GD/Convair—Aug. 3, 17.



**PRIZE WINNER**—Holding trophy won by CRA Coin Club's entry in San Diego County Fair is John Barrett (right) of GD/Electronics, club president. At left is George Stewart, GD/Convair Dept. 6, who was in charge of display of Convair tokens and medals.

## Vending Service Name Changed

There has been a change in name and new uniforms for in-plant vending machine service crews, but personnel, management and services rendered are the same.

The parent service company involved is now Automatic Retailers of America. Davidson Brothers continue as a division of Automatic Retailers of America, a name adopted after Davidson Brothers expanded into a nationwide organization.

Joe Chandler continues as the Astronautics plant manager under John Adams, area manager, with headquarters at GD/Convair Plant 1.

## Aerospace Society Invites Engineers

"Engineers, Sell Yourselves," will be the topic discussed by E. T. Clair at the Aug. 1 meeting of Aerospace Electrical Society, San Diego Chapter.

Clair, formerly of GD/Astronautics and now vice president of Cohu Electronics, will stress the importance of engineers marketing their services as a manufacturer markets his products.

All General Dynamics people are invited to attend the 7:30 p.m. meeting in the IAS Bldg., Harbor Drive, said Bill Ochodnicki, GD/Convair Dept. 6, local chapter president.

## GD Men Are Sought For 'Big Brothers'

General Dynamics men have been invited to participate in "Big Brothers of San Diego County," a group of volunteers who befriend boys suffering from lack of adult male guidance.

The organization reports 247 "Little Brothers" presently awaiting "Big Brothers."

Interested employees may contact the group at 520 E St., or telephone 234-9158 for information.



# Sports & Recreation

## Varsity Softball Team Seeking 2nd Half Title

ARA's varsity softball team is "down to the wire" in the open division, San Diego softball league second half tournament.

After a slow start in the first half of league play, the Astro team won its opener in the second half race by downing Ryan Firebees, 2-1, on a stout pitching performance by Roy Neie and clutch hitting by Garfield Winters.

The next contest added to the record when Astro edged USS Sperry, 3-2.

Subsequent losses to Tamale Kings (2-3) and El Cajon Hawks (0-4) evened the books, with the softballers hoping to capitalize on two remaining contests to

snare the second round title and enter the play-offs.

Facing the ARA unit are rematches with Tamale Kings, 8 p.m., July 26 on ARA diamond, and with El Cajon at Helix High, Aug. 1 at 8 p.m. GD/Astro fans have been urged to lend moral support by attending these contests.

Also scheduled are exhibition games with South Bay Church League All-Stars at Kimball Park, 12th and D, National City at 8 p.m., July 25, and with Lakewood All-Stars on the ARA field, 7:30 p.m., Aug. 3.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★  
**ARCHERY** — Target shoots each Thursday, 7:30 p.m., ARA softball diamond.

**BRIDGE** — Regular play nights, Fridays, 7:30 p.m., ARA Clubhouse.

**COIN CLUB** — Picnic, 1:30 p.m., July 28, ARA Area

**FISHING** — Surf fishing tonight (July 24), 7 p.m., 200 yards south of Scripps Pier, La Jolla Shores. Meeting 7:30 p.m., Aug. 7, ARA Clubhouse.

**GARDEN CLUB** — Now preparing for joint ARA-CRA Summer Show, Aug. 11, Floral Assn. Bldg., Balboa Park. Meeting in Floral Assn. Bldg., 7:30 p.m., Aug. 7.

**GUN CLUB** — Troy-type trapshoot, 7:30 p.m., July 26. Regular club shoot Aug. 4. Both at Gillespie Field Range.

**ICE SKATING** — Skate nights each Thursday, 6:30 p.m., Mission Valley Ice Plaza.

**RIDING** — Luau for new members, 8 p.m., Aug. 3, ARA Area. Junior Riders meet 2:30 p.m., Aug. 3, ARA Clubhouse.

**SAILING** — Second shift contact for club information is Jerry Stulco, ext. 1170. Meeting 7:30 p.m., Aug. 5, ARA Clubhouse.

**SOFTBALL** — Representative team plays home games each Friday, 8 p.m., ARA diamond.

**TEEN CLUB** — Special dance, 7:30 to 11 p.m., Aug. 3, ARA Clubhouse. Band: "The Nomads."

**TENNIS** — Meeting 7:30 p.m., July 30, ARA Clubhouse.

**TOASTMISTRESS** — Serra Mesa Toastmistresses meet 7:30 p.m., Aug. 5, ARA Clubhouse. All GD/Astro wives, women employees welcome to attend.

## CHAPERONES NEEDED FOR ARA TEEN CLUB

Next event for ARA Teen Club is a special dance Aug. 3, 7:30 to 11 p.m., in ARA Clubhouse, featuring "The Nomads" band.

Admission is 50 cents per person, with each member permitted one guest plus a guest couple. Sport shirts and slacks are appropriate dress for boys, while school clothes are suggested for girls.

ARA Commissioner John Hess has issued a strong appeal for parents of club members to serve as chaperones at the group's dances held the first and third Saturday evenings of each month.

Without additional parental aid, it may be necessary to curtail Teen Club activities severely, he said. Hess asked that volunteers leave name and telephone number with ARA Headquarters, ext. 1111, or contact him at 469-6498 after 5 p.m.

Teen Club membership is open to all GD/Astro sons and daughters. Parents may complete club applications at employee services, Bldg. 8.

## Meeting Date Set For Astro Sailors

A new contact for second-shift sailing enthusiasts and a regular meeting date have been announced by ARA Sailing Club.

Jerry Stulco, ext. 1170, will discuss sailing activities with interested second and third shift employees. Astro sailors will gather at ARA Clubhouse Aug. 5 for a regular meeting beginning at 7:30 p.m.

Many members continue to take advantage of instruction offered through the club. Contact H. E. Mayer, ext. 1193, for information.



**ACES IN FACT**—Members of "Astro Aces" bridge team pose with Commissioner Art Saastad, right, and first-place trophy won in recent IRC-sponsored San Diego industrial tournament. From left are Marvin French, Bill Chapman, Helen Grijalva, Pauline Blough, Dave Swingle and Saastad. Not shown is team member Paul Lewis.

## Bridge Teams Make Good Showing In SD Industrial Tournament

ARA Bridge Club teams placed first, fourth and fifth in a recently completed San Diego industrial tournament played under auspices of American Contract Bridge League and sponsored by Industrial Recreation Council.

A General Atomic team placed third among nine teams competing.

Astro Aces was in top slot, sparked by players Marvin French, Dept. 376-5; Bill Chapman, Dept. 966-8; Helen Grijalva, Dept. 596; Dave Swingle, Dept. 373-7; Pauline Blough, Dept. 324-4; and Paul Lewis, Dept. 101.

In fourth place was Astro "Gold" team, with Astro "Green" team in fifth.

Competition lasted over a 10-week period. A new tournament is now under way, with still another scheduled to open in September. Prospective entrants for the latter event have been asked to contact ARA Commissioner Art Saastad, ext. 3012, Plant 71.

## Surf Anglers Plan Shindig

La Jolla Shores, just 200 yards south of the Scripps Pier, will be the gathering point tonight (July 24) at 7 when ARA Fishing Club members stage a "surf fishing shindig."

According to Commissioner T. B. Field, all corbina, halibut, surf perch and croaker in the area have been invited to feed between 7 p.m. and midnight. At least that's when the anglers will be on hand.

Club members and guests will bring their own food, with ARA providing beverages.

Next regular meeting of the Fishing Club will be Aug. 7 at 7:30 p.m. in the ARA Clubhouse. A movie on "Fighting Forest Fires" will be shown and Jack Hooper will present a special slide show on the Mayan civilization of Central America.

## Astro Son Named Athlete of Year For Palmdale High

**EDWARDS RS**—In an era of specialists in sports few youngsters can match the accomplishments of a General Dynamics/Astronautics son here who was recently named Senior Athlete of the Year at Palmdale High School.

He is Mike Pease, son of Fred R. Pease of Astro's Dept. 975-3, who won 12 letters during his high school sports career.

Pease earned a baseball letter as a freshman and in his sophomore, junior and senior years he lettered in baseball, football, basketball, and golf.

Los Angeles State College has awarded Pease a scholarship for the coming year.



**FOR TYPEWRITER** — Mrs. Dick Jaeger, president of AMR Astro Wives' Club presents check for \$150 to R. T. Robbins to buy electric typewriter. Robbins, an Astro employee, represents Brevard Chapter, Council for Exceptional Children. Typewriter will be utilized by children.

## Round Robin Tennis Awards Go to Four

Four players who defeated a field of 18 in ARA Tennis Club's round robin doubles tournament during GD/Astro's Open House July 13 will receive awards at the group's meeting, 7:30 p.m., July 30 in ARA Clubhouse.

First place winners were a father-son combination. Ed Bennett, Dept. 364, and his son, Dave, led competition in the tournament's B and A groups, respectively.

Jack Thomas, Dept. 573-3, finished second in the B group, while A group runner-up was Don McClarren, Dept. 377-8.

## ARA Coiners Plan Picnic for July 28

GD/Astro coin collectors will combine their hobby with an old fashioned summertime picnic when they gather in the recreation area July 28 under auspices of ARA Coiners.

President John DiPauli said the event will open at 1:30 p.m. with games, door prizes, and a coin auction to be featured.

Tickets for the event require a donation of \$1.50 for adults, 75 cents for children, and are available from Sally Jane Rose (telephone 278-9680) or any club officer.

Details about the auction are available from DiPauli, 488-8091.

## Ride Club Members Will Attend Luau

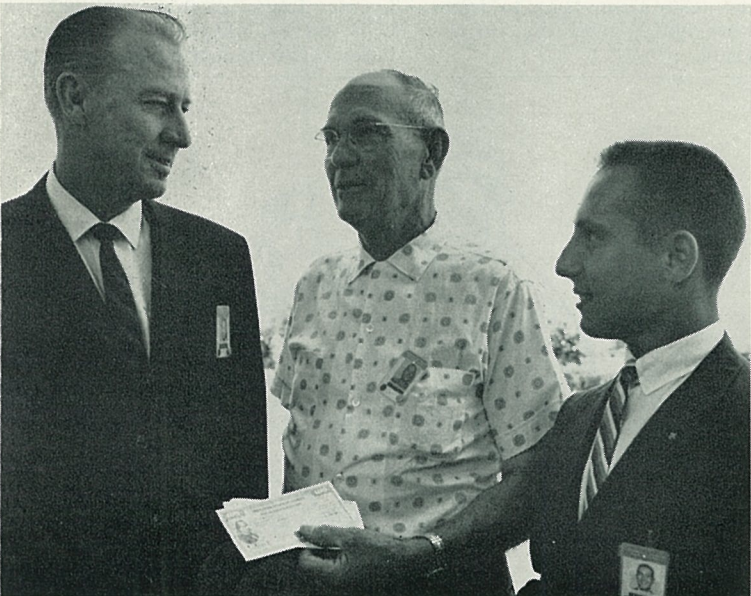
New members introduced to ARA Riding Club during Open House activities July 13 will be feted by the group at an Hawaiian luau to be held at the recreation area pavilion at 8 p.m., Aug. 3.

Reservations for the affair are now being accepted by Joe Pena, 277-6429.

The club is continuing regular work parties Monday and Wednesday evenings and on Saturday at its newly-acquired site on Murphy Canyon Road.

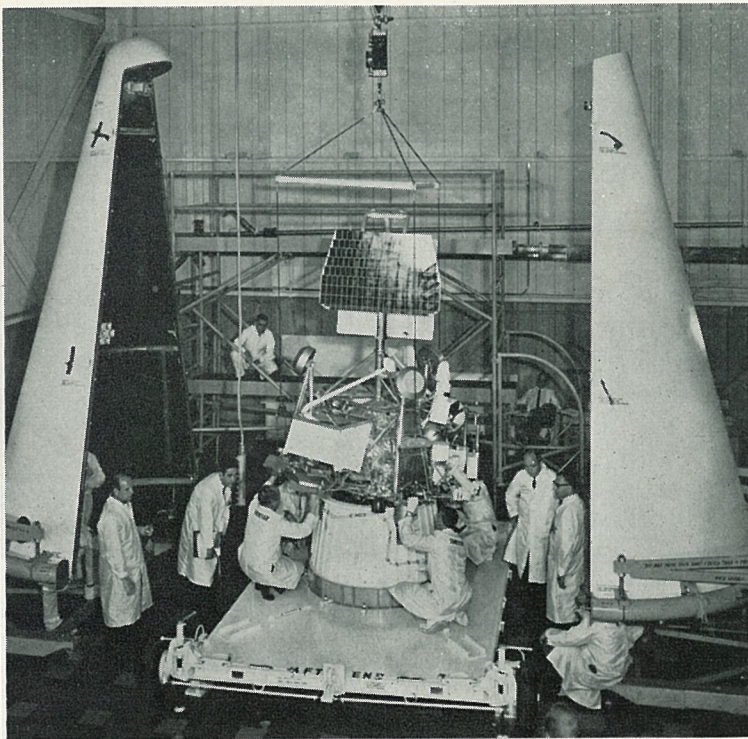
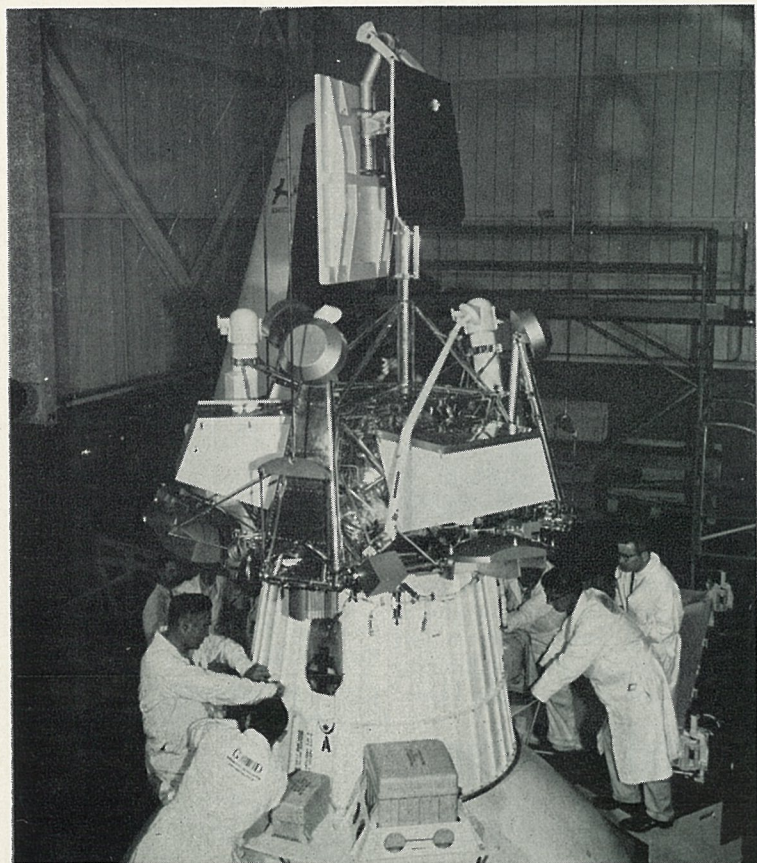


**IN THE FIELD**—In top photo are Edwards Rocket Site golfers who collected trophies in NMA tournament at Palm Springs. From left: Larry Failor, Fred Pease, George Burks, L. M. Barnes. Latter holds trophy won by Plant 71's Ernie Galbos as member of Edwards RS team. In lower picture, are new officers of General Dynamics Antelope Valley Management Association. From left: Phil Ayer, vice president; Paul Grubl, president; Doug Wheeler, secretary; Glenn Baxter, treasurer.



**LUCKY SAVERS** — J. R. Mitchell, left, recently presented U. S. Savings Bonds to winners of drawing held during recent campaign at GD/Astro. W. D. White, Dept. 718, center, received \$100 bond, while \$25 bond went to Herbert Moskowitz, Dept. 651-2, right. GD/Astro reported 73 per cent of employees now buying bonds through payroll deduction.





**CAPSULED**—Nose fairings are mounted on assembly cart ready to roll, encapsulating Surveyor. Note light reflecting from spacecraft's solar panels.

## Centaur and Surveyor Joined in 'Match-Mate'

Centaur and Surveyor got together for the first time recently for a series of "match-mate" tests.

Those associated with the month-long program involving the moon-probing combination proclaimed the two to be "perfectly mated."

Beforehand, the operation was likened to threading a needle—blindfolded! That is, the mating of a sophisticated electronic spacecraft (Surveyor) to its launch vehicle (Centaur) can lead to trouble if there is the slightest variance.

Too, the three major components involved had been built at three different locations.

Hughes Aircraft builds Surveyor. General Dynamics/Astronautics produces both the Atlas first stage and Centaur second stage launch vehicles. General Dynamics/Fort Worth, under contract to Astro, turns out the honeycomb fiber glass nose fairing assembly that encapsulates Surveyor and the Centaur forward bulkhead.

Match-mate tests were performed at Hughes' El Segundo, Calif., plant.

They were conducted to verify the design, alignment, accessibility and compatibility of the prototype equipment involved and to simulate a journey from the spacecraft assembly area to launch pad. There were 13 major test objectives in all. Technicians from Astronautics, Hughes and NASA performed the tests.

**"The joint efforts of various Astronautics' design, fabrication, testing and support groups were responsible for the excellent hardware used in these tests,"** said Bob Benzwi, chief of payload integration-Centaur.

"In addition, the on-schedule completion of this program clearly demonstrated that two major organizations (Astro and Hughes) can jointly conduct critical technical operation when thoughtful management planning has been employed," he added.

Astronautics assembled a team of specialists for the job under Jack Fischer Jr., project engineer. Tom Fitzpatrick was test conductor, while Carl Miner represented Astro's NASA office. Team members included Dick Jones, airborne design; Bruce Warren, ground handling equipment; technicians Bill Wilkerson, Joe Hoffman, Svend Nilsson and Pat Cole; Don Prey, test support; and Lee Stouse, quality control. All are from Centaur project organizations.

Many groups and departments contributed to the effort. For instance, ground handling equipment ranging from complicated dual torus assembly carts to nose cone support rings were built by tooling to Astro design. Manufacturing operations built a "hard" mockup of the Centaur forward bulkhead and provided

flight-type adapters. Other groups supplied technical help as needed.

"Every item we shipped to Hughes performed satisfactorily, a direct tribute to the skills responsible for them," Benzwi said. "In fact, there were no delays of any type due to Astronautics-produced components, a key factor in meeting test schedules."

Prior to forwarding the test components to Hughes, Astro team members checked compatibility of all equipment in functional tests at Plant 19.

Fitzpatrick indicated that Plant 19 checkouts made it possible to iron out minor problems well in advance and to acquaint team members with their tasks.

Components were assembled until three major subassembly units were complete: mated nose fairings, the spacecraft and the forward bulkhead.

The forward bulkhead mockup was fitted with the aft adapter, then surrounded by the lower portions of the nose fairings, called barrel sections.

The matched nose fairing conical sections were fitted into the torus assembly and mounted on wheeled carts for ease of handling. These pincherlike torus half rings, when brought together, form the major support for the encapsulated Surveyor.

Surveyor was mounted atop the Centaur forward adapter which was fitted atop a special transport trailer.

For assembly the fairing halves were brought together, attached, and the torus assembly bolted together, making a snug nest. This entire combination was lifted and fitted atop the Centaur bulkhead assembly.

Officials from NASA's Lewis Research Center and Jet Propulsion Laboratory personnel viewed the tests from time to time. All were elated over the entire program.

## Surveyor Job To 'Feel' Moon

Before man can journey to the moon he must know quite a bit more about the voyage involved and the lunar surface itself. This, in brief, is the mission of the Atlas/Centaur-launched Surveyor spacecraft.

The Surveyor program mission is threefold: to provide lunar astronauts with a foreknowledge of conditions essential to their safe landing and return; to develop techniques in control, guidance, communication and landing required for a successful manned voyage; and to obtain basic scientific data about the moon.

Jet Propulsion Laboratory is manager of the Surveyor program for the National Aeronautics and Space Administration.

Surveyor spacecraft will weigh approximately a ton at launch. It will require about 66 hours for the voyage from Cape Canaveral launch pads to the surface of the moon where it will soft-land.

Atlas will provide initial propulsion to carry both Centaur and Surveyor out into space, then separate. Centaur engines will ignite and position Centaur in a 100-mile-altitude "parking orbit" for a brief period before striking out on the journey to the moon. On command, Surveyor will separate from Centaur and proceed alone, "navigating" by fixes on the sun and Canopus, one of the brightest stars. When descending to the moon's surface, Surveyor will be slowed to about 6 mph by retrorocket power.

Three television cameras will relay pictures to the earth. Instruments will collect lunar soil samples and make geo-chemical analyses, "feel" the lunar surface to assess its physical properties and measure radiation and particle fields of the moon's atmosphere.

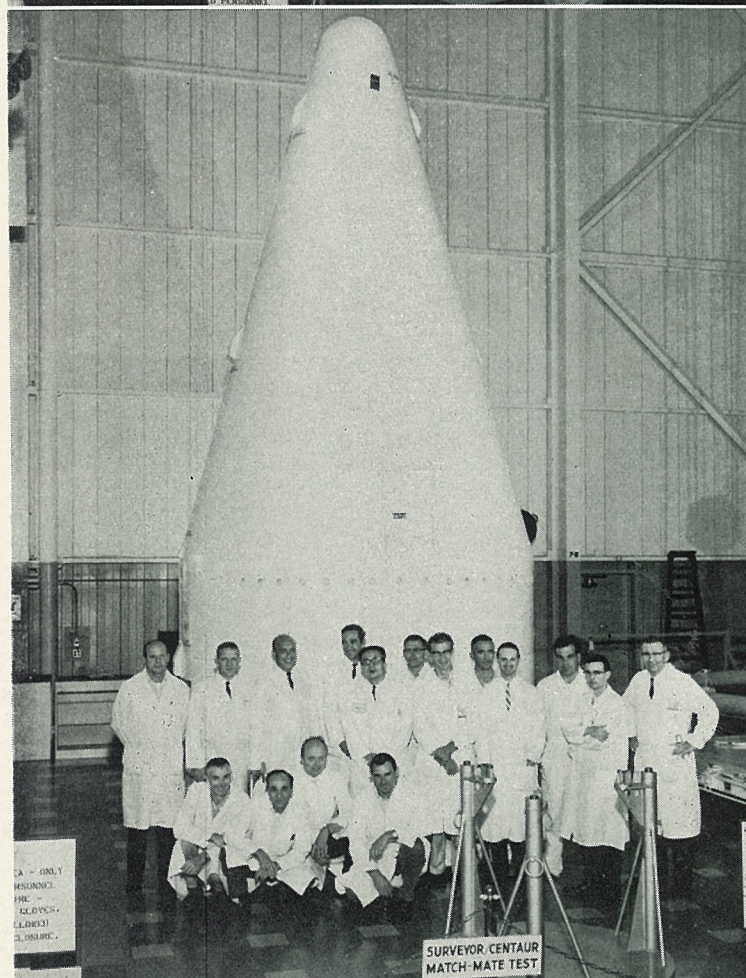
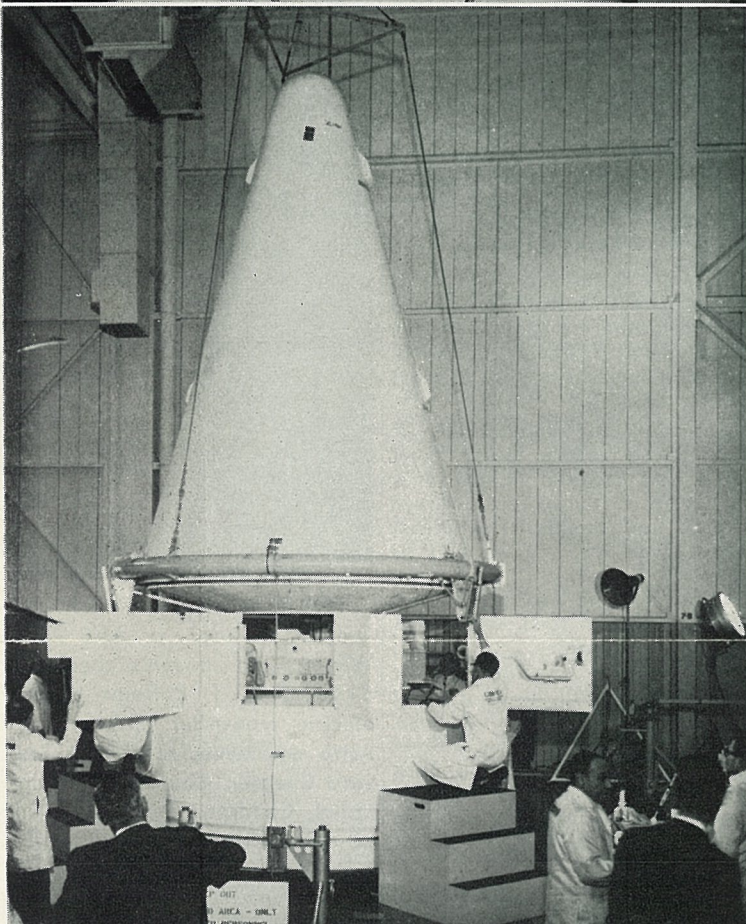
## Camera Added To S-C 4020

Versatility of the S-C 4020 system now is available with interchangeable 16mm or 35mm recording cameras. First firm to use the new 16mm camera with its S-C 4020 is Martin-Marietta Co. of Denver, Colo.

Using the 16mm camera, output from the recorder is compatible with existing information storage and retrieval systems. The smaller film size reduces film costs while reducing image size less than 10 per cent from that of 35mm film.

Function of the camera in the S-C 4020 is to record computer data presented on a special cathode ray tube at speeds consistent with today's large-scale computers. Output from the recorder also can be printed out directly on photo-recording paper.

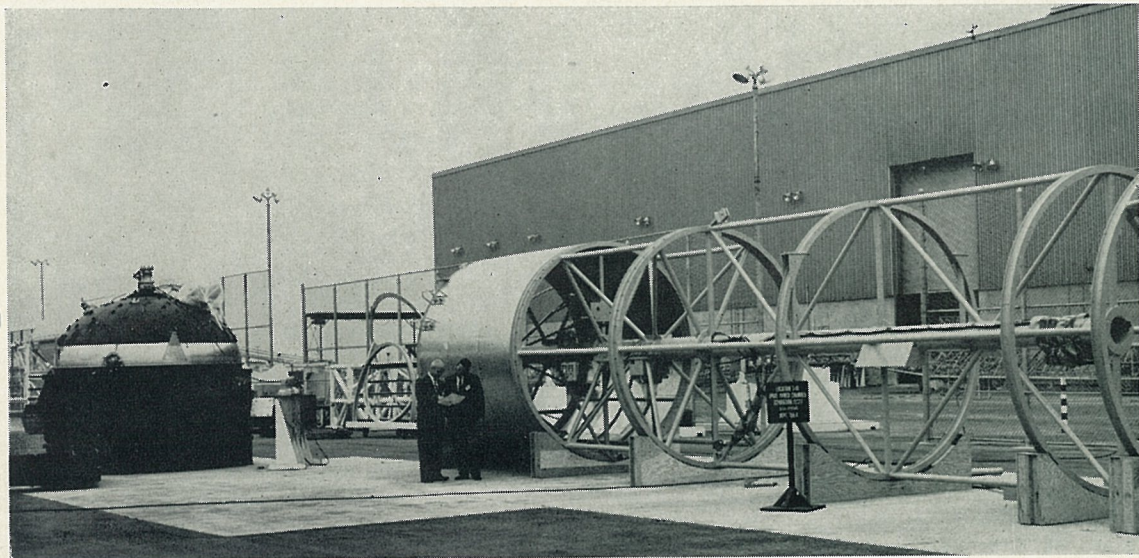
In addition to recording alphanumeric printing from the computer, the S-C 4020 converts computer language into combinations of curves, graphs, and drawings for easier understanding by users.



**GET TOGETHER**—"Match-mate" tests were conducted recently at Hughes Aircraft, El Segundo, Calif., when Surveyor and Centaur were brought together. In top photo, GD/Astro's Dick Jones, Don Prey, Pat Cole, Joe Hoffman, Bill Wilkerson, Svend Nilsson, Tom Fitzpatrick check fit. In center photo panel is opened for checking accessibility of electronics packages, air conditioning ducts, etc. Nose assembly that encapsulates Surveyor is built at GD/Fort Worth. Hughes Aircraft builds Surveyor; GD/Astronautics produces Centaur.







READY FOR TESTS—Astronautics turned out "whalebone" Atlas vehicle, right, to be mated to simulated Centaur vehicle, rear, and put through separation test in space environmental chambers at NASA's Lewis Research Center. Test Conductor W. J. Christman and T. R. King, engineering test support foreman, look over final plans prior to shipment of units to Cleveland.

## AF Gives Full Support To Value Engineering

"The best-managed companies stand to gain by increasing their efficiency—and so does national security," said Air Force Secretary Eugene M. Zuckert in a recent address of major significance to General Dynamics/Astronautics.

Zuckert was referring to Defense Secretary Robert S. McNamara's Presidential charter to "eliminate 'gold-plating'" in defense procurement; to trim the "frills" from military hardware by analyzing its function, then achieving this function at the lowest overall cost.

The military profits in terms of better, more reliable equipment; the public gets more for its tax dollar; and contracting industries improve their competitive

positions through increased efficiency.

At GD/Astro, one phase of the effort to achieve these ends takes the form of a full-scale value engineering program.

The Air Force Plant Representative's Office, commanded by Col. Malcolm K. Andresen, as well as GD/Astro management gave full support to a pilot VE seminar held earlier this year.

Seminar coordinator was E. A. Lindem, Dept. 130-3, with the program directed by E. D. Heller, manager of value control (Dept. 165).

Among participants were two AFPRO engineers (John B. Cianciarulo, production division, engineering branch, and Frank H. (Continued on Page 2)

## Utility Costs Drive Zooms Beyond Target

General Dynamics/Astronautics' year-long campaign to reduce utility costs has proven highly successful, exceeding original goals by more than \$52,000.

Astro launched the effort in July, 1962, with an eye to lowering the cost of gas, electricity and water service by at least \$200,000 per year. Final tabulations through June show actual savings were \$252,760.82!

This saving would pay gas, water and electricity bills for 1,150 average San Diego homes for a full year!

A special word of praise to all who took part in the effort came



OVER THE TOP—Astro's year-long utilities cost-reduction program has exceeded goal. Key plant engineering people involved from left: Ken Taylor, Jim Dallas, Pete Fekke and Joe Dragonetti, show how utility costs have dropped since mid-1962.

this week from W. J. Stanley, manager of plant engineering.

"Individuals, functions and departments have helped through suggestions and direct assistance in setting up cost-reducing efforts," Stanley said. "Each person who helped can take pride in our accomplishments."

Stanley also indicated that results of the effort have been so encouraging that there will be a continuation of the program to encourage further reductions in utility costs. The program will continue indefinitely with every employee with an idea on this subject urged to contact plant engineering at any time.

Joe Dragonetti, ext. 3486, Plant 71, will accept suggestions directly.

Several factors occurring during the drive highlighted its success. For instance, Astronautics assumed complete responsibility for Plant 19 during this period, added new facilities like the GLOTRAC test unit and more (Continued on Page 2)

## Centaur Testing Slated at LERC

General Dynamics/Astronautics engineers and technicians are on hand at NASA's Lewis Research Center (LERC) in Cleveland, Ohio, to help prepare for a series of Atlas/Centaur tests next month.

Tests, supporting Centaur development, will continue over a period of months and will be conducted on test elements fabricated by Astro.

J. E. Lauen, chief of LERC test operations, coordinates all Astro test activities and support at Cleveland.

G. G. Christ, test conductor, will guide efforts involving Atlas vehicle dynamics tests and Centaur vehicle environmental tests. C. H. Lauback and W. J. Christman of engineering test laboratories are heading Atlas/Centaur separation tests. Crew members for each of the three major programs hail from various functions and organizations involved.

Two programs center in space environmental chambers created by LERC following extensive updating of a former high altitude wind tunnel.

One cylindrical chamber, 30 by 100 feet, is topped by a dome some 22 feet in diameter and 20 feet high. This dome provides access required to lower the Centaur vehicle into the chamber and position it upright. In operation the chamber duplicates conditions found 90 miles above the earth, including vacuum and thermal radiation. In this environment Centaur electrical and mechanical systems will be operated in simulated missions. As presently planned, only propellant flow and engine ignition will be excluded.

The Centaur test vehicle was flown here from Cape Canaveral where it has served other test and validation purposes.

The second chamber is "L"-shaped, measuring from 30 to 50 feet in diameter and 300 feet in length. It can duplicate atmospheric conditions found at 100,000 feet and will be the only facility of its type in which Atlas/Centaur separation tests can be performed.

Astronautics has designed and fabricated a special "whalebone" Atlas for these tests, complete with all mating components and fittings. Also a pressurized unit has been built to simulate the Centaur vehicle which, despite its smaller size, duplicates all weight and configuration requirements of the real thing.

During tests, separation rockets will be fired and the mating section of the Atlas propelled away from the Centaur stage exactly as this will take place in space. The tests will help verify the system's ability to effect a clean separation during actual missions.

At nearby Sandusky, site of LERC's Plum Brook Station, a modified Atlas space launch vehicle is being installed in a special dynamics research test stand.

This vehicle, Atlas 116-D, is also a veteran of Cape Canaveral tests. It was returned to Astronautics and in three and one-half weeks modified and checked out for duty here. Modifications included the removal of engines and most airborne systems and the installation of other required items to fit test tower configurations. This work has earned praise for those who took part since it was accomplished on an accelerated basis and under unusual conditions; for instance, the need to design, fabricate and install special one-of-a-kind components to make the job possible.

During dynamic and static-type testing a complicated system of stanchions and cables will apply crushing forces to the Atlas similar to those encountered in flight.

## W. D. Mead Appointed To Spares Position

Walter D. Mead, former chief of material services at General Dynamics/Astronautics' Vanden-



berg AFB operations, has been named manager of service spares (Dept. 330) by E. D. Bryant, vice president-operations.

In his new assignment, Mead reports to R. C. Harbert, director of customer service.

Mead is a native of Greenwich, Conn., educated at Johns Hopkins University, Baltimore, Md., following Marine Corps service.

He joined GD/Astro in 1956 and after a manufacturing control assignment at Cape Canaveral, moved to Dyess AFB during Atlas launch site activation as chief of production control, chief of task control and chief of material services, consecutively.

## Special Instruction in Handling Designed to Protect Gyroscopes

Among the most delicate, expensive and "accident prone" small components found in every General Dynamics/Astronautics-produced launch vehicle are gyroscopes.

In 1962 Astronautics personnel handled 1,500 gyroscopes, each about the size of a small oatmeal box and valued at about \$5,600.

Despite the most careful attention in handling, installing and testing gyroscopes, both as individual components and as part of airborne systems, rejection rates have traditionally been high.

Phil I. Harr, Astro's director of reliability control, assigned the task of studying the rejection problem to quality assurance engineering under L. S. Franklin, chief.

Working closely with units responsible for gyroscope use, Franklin's people singled out two major factors warranting additional attention: field and factory failures; and possible improper handling.

Six-day cycle tests for gyroscopes were added in receiving inspection. They led to the discovery of marginal design areas which, in turn, assisted engineering in designing corrections to improve gyroscope designs. A new gyroscope was turned out which helped cut rejection rates by 40 per cent.

Astronautics followed this important step with a special 10-hour training program currently in progress. Ultimately, more than 150 employees, every man and woman at Astro who comes into contact with gyroscopes, will be phased through the training. They represent every unit from inspection, fabrication and test-

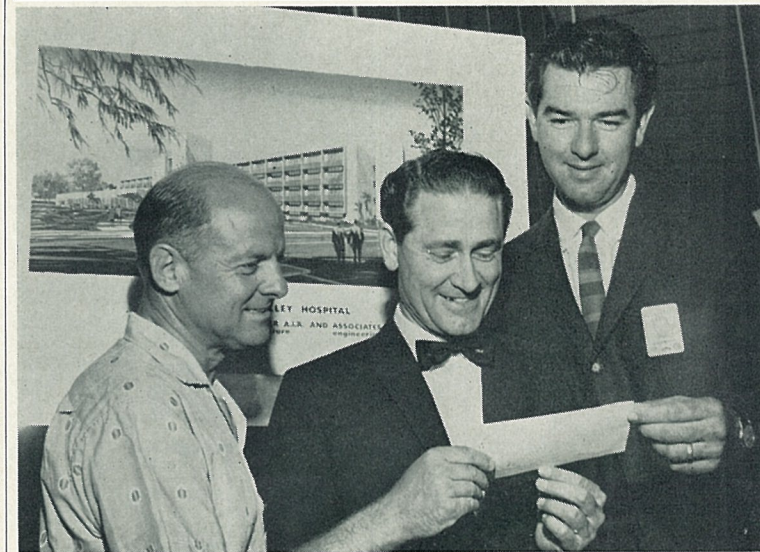
ing through those making final checkouts.

J. E. Hanratty of educational services conducts the week-long training sessions. Each student is given a thorough course in theory, handling and checking of gyroscopes. Further laboratory-type sessions show them exactly what should be done and what should not be done with gyroscopes.

"We are seeking employees in every department and function who come into personal contact with gyroscopes at any time for this training," Franklin said. "Supervisors may contact me direct for information on the program."

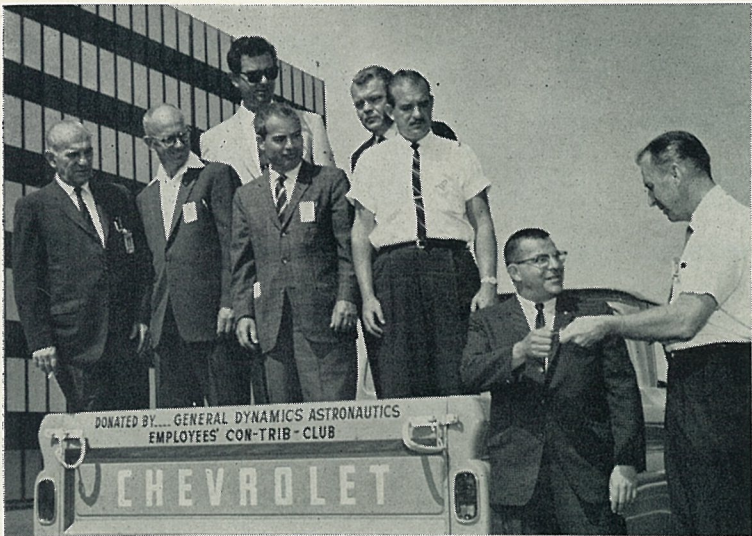


MUCH ALIKE—Gyroscope in one hand, eggs in another, Astro's J. E. Hanratty instructs special class in handling. Gyroscopes must be handled with even more care than eggs.



MAJOR GIFT — With artist's conception of Paradise Valley Hospital as backdrop, L. D. Graeff, left, IAM representative on GD/Astro Employees' Con-Trib-Club, and J. T. Schultz, right, representing company, present \$3,500 Con-Trib check to Victor Duerksen, assistant hospital administrator. Gift is earmarked for hospital building fund.





**ROLLING STOCK**—Astro Con-Trib-Club recently gave \$2,000 for purchase of pickup truck to Synanon House of San Diego, group providing rehabilitation for narcotics users. J. R. Mitchell, right, Con-Trib chairman, presents keys to Arnold Ross, Synanon resident director, while Dave Haslanger, Al Cernius, Jerry Schultz, Mike Alianelli, Don Glasser and Floyd Allen look on.

## Log Book Entries

### Service Emblems

**MAIN PLANT**  
Service emblems due during the period Aug. 16 through Aug. 31.  
Twenty-five-year: Dept. 143-4, R. E. Hibbs.  
Twenty-year: Dept. 036-1, Wilma R. Early; Dept. 383-4, L. V. Burgess; Dept. 527-5, Andrew Anderson; Dept. 957-2, H. B. Ott.  
Fifteen-year: Dept. 146-2, T. J. Bevers Jr.; Dept. 250, W. C. Bayne, D. W. Glasser; Dept. 387-1, George Graham; Dept. 401-3, J. M. Shinn; Dept. 759-0, Lyle Carvey Jr.; Dept. 835-3, C. E. Goodall.  
Ten-year: Dept. 036-1, J. C. Van Caster; Dept. 123-0, Dorothy N. Alexander; Dept. 130-1, W. W. Shaffer; Dept. 142-5, J. W. Anderson; Dept. 143-1, G. F. Wilson; Dept. 146-1, T. L. Murray; Dept. 147-1, J. G. Lorimer; Dept. 250-1, J. N. Miller, J. C. Moore, C. H. Turner; Dept. 313-0, J. R. Langham; Dept. 319-0, Penelope L. Lockwood; Dept. 362-3, L. H. Matthews; Dept. 377-4, Z. G. Bosworth; Dept. 382-1, R. V. Nielsen.  
Dept. 451-0, C. H. Bibb, Charlie Edwards, J. H. Kunselman, M. A. LaFrance; Dept. 462-0, E. E. Smith; Dept. 504-4, W. G. Hardy; Dept. 523-1, C. F. Froehlich Jr.; Dept. 526-8, Eva W. Hodges; Dept. 631-1, E. E. Lindgren; Dept. 663-4, Paul Buchy Jr.; Dept. 678-0, R. J. Bishop.  
Dept. 756, J. C. Hickey, H. E. Naish; Dept. 758-0, F. D. Holbrook; Dept. 759-0, J. S. Angelo, Frederick Mullin, S. B. Quillen; Dept. 781-0, Edna F. Yancey; Dept. 832-1, Irene B. Thornton; Dept. 835, W. S. Hill, G. E. Riggs; Dept. 971-5, J. N. Lee; Dept. 972-0, M. D. Downey.

### Papers Presented

FERRISO—C. C., and BREEZE, John, both Dept. 596-2, "Absolute Integrated Intensity Measurements of the 2.7 Micron CO<sub>2</sub> Band between 1,000° and 3,000° K," European Conference on Molecular Spectroscopy, Budapest, Hungary, July 25.  
GOOD—Robert J., Dept. 966-3, "Thermodynamics of Liquid Surfaces," Gordon Conference on Adhesion, New Hampton, N. J., July 15-19.  
GOOD—Robert J., Dept. 966-3, "Transport of Aqueous Solutions at a Mercury-Glass Interface Induced by Electric Polarization," Gordon Conference on Chemistry at Interfaces, Meriden, N. H., July 22-26.  
MARINO—L. L., Dept. 596-0, "Charge Transfer Between Cesium Atoms and Rubidium 85 and Rubidium 87," Conference on Physics of Electronic and Atomic Collisions, London, July 26.  
McLEOD—John, Dept. 598-0, "An Analog Computer Simulation of Cardiovascular System Hydrodynamics," International Conference on Medical Electronics, Liege, Belgium, July 22-26.  
NEYNABER—Roy H., Dept. 596-0, "Low Energy Electron Scattering from Metastable Helium," International Conference on Physics of Electronic and Atomic Collisions, London, July 26.  
ROTHER—E. W., Dept. 596-0, "Interaction Potentials from the Velocity Dependence of Total Atom-Atom Scattering Cross-Sections," International Conference on Physics of Electronic and Atomic Collisions, London, July 26.

### Personals

**MAIN PLANT**  
We wish to express our utmost appreciation to all of our friends at Convair, Astronautics, and Fort Worth for the many acts of thoughtfulness and kindness in easing our difficulties and sharing our grief during the illness and death of our husband and father, Larry C. Brandvig.  
Helena Brandvig, Clifton and Alice.

## General Dynamics NEWS

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## Astro Creates Nuclear Section

GD/Astronautics added an "Atomic Age" capability recently with establishment of a nuclear technology section (Dept. 528-4) under Vice President W. W. Withee in his capacity as chief engineer-propulsion (acting).

Directed by Dr. Walter K. Stromquist, the new group is charged with establishing and maintaining the division's capability in nuclear technology.

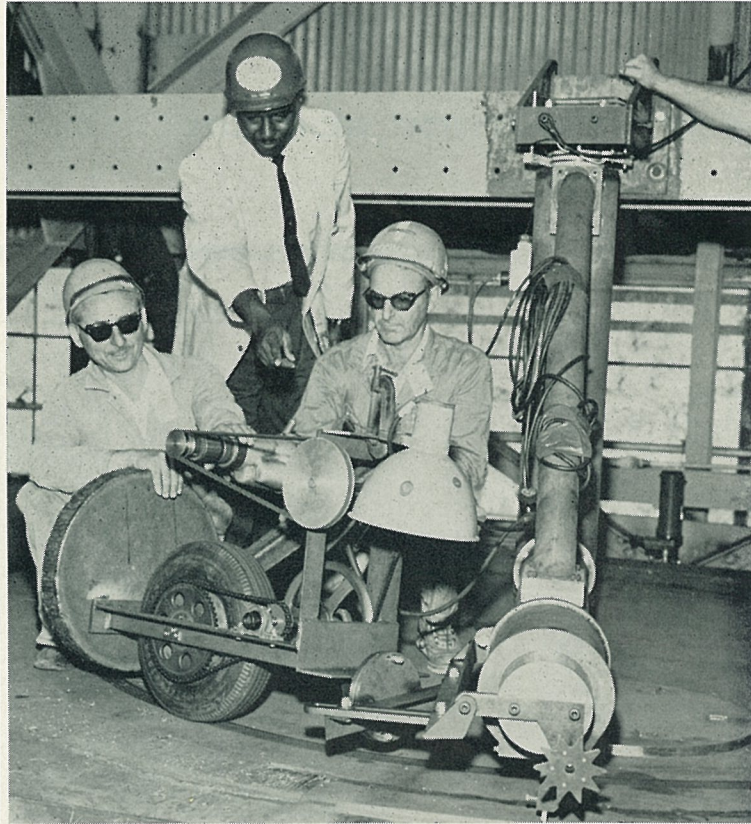
Services of its staff of 10 engineers and physicists are available for technical assistance to any portion of GD/Astro's engineering organization.

"Establishment of this section provides GD/Astro with an added institutional capability to support engineering programs both with specific technical knowledge, and with an understanding of the framework in which this knowledge is to be applied," Withee said.

Principal activities of the group include systems design and analysis for nuclear engine stages and auxiliary power systems; provision of data and design support for other systems and components affected by nuclear and space radiation environments; analysis of nuclear hazards and radiological safety; and support for test specifications and testing technique development as related to radiation experiments.

Typical of nuclear technology's work is a current project in which the group is developing a computer code to predict radiation within a space vehicle during its passage through artificial and Van Allen radiation belts.

The task is being accomplished by E. L. Noon, senior research engineer, and O. L. McDermed, research engineer.



**UNDER WAY**—Engineer C. L. Holmes, standing, checks on progress as Dave Brockman, left, and M. W. Mathewson operate "portable boring mill" produced by GD/Astro engineering test support for use at Point Loma Test Site. Device was used to cut circular groove in two-inch steel plate.

## 'Rube Goldberg' Device Designed For Boring Job—and It Works!

An original design, an "Erector Set," and plenty of "can-do" spirit were ingredients used at GD/Astronautics recently in a project supporting NASA's Atlas-launched OAO (Orbiting Astronomical Observatory) program.

For structural tests, plans called for an Atlas "stub tank" (forward portion of the space booster) with Agena stage and OAO payload attached, to be erected in "C" Tower at GD/Astro's Point Loma Test Site.

Base of the Atlas tank was to rest on a gasket fitted to a 14 by 14-ft. plate of two-inch steel. Absolute flatness of the plate was to be assured by grooving the plate to accept the circumference of the Atlas.

Unfortunately, no machine in Southern California was big enough for the job!

This was the problem on which

engineers Clarence Holmes and Bill Fogg of systems test lab (Dept. 565-1) consulted General Foreman Ralph Bauman's engineering test support (Dept. 756).

Bauman assigned the project to Foreman R. G. Carman's area, where Paul Blackwell turned out a design for a tool to do the job, under direction of Bill Valentine, assistant foreman.

Bill of materials for this "portable boring mill" called for purchase of only a few items: some chain, sprockets and bearings—and a wheelbarrow wheel.

Other portions of the assembly were available within GD/Astro or could be readily produced in Dept. 756 machine shop.

At Point Loma, Dick Bada, "C" Tower supervisor, used the facility's assortment of structural steel beams (drilled at regular intervals for assembly in a variety of shapes for a variety of purposes, and dubbed "The Erector Set") to set up a supporting structure for the tool.

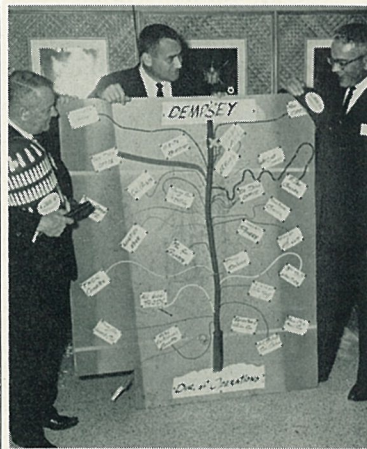
The job was to be done with the plate in place in "C" Tower.

Basically, the "portable boring mill" consists of a cutting tool mounted on the outer end of a radial arm which extends from a rotating spindle.

A large drill motor drives the tool through a system of belts and sprockets, connected to the rubber wheelbarrow wheel for traction.

It works!

The tool—looking like something from a Rube Goldberg cartoon—bored out some portions of the groove to three-eighths-inch depth, completing the massive job to .004-inch tolerance.



**LIGHTER SIDE**—B. G. MacNabb, left, new director of test engineering for Astro, presents "grapevine" needed by his successor, Ken Newton, new director of AMR operations. Looking on is W. W. Withee, vice president—engineering. MacNabb holds oversized hard hat.

### Retirements

**MAIN PLANT**  
MITCHELL—G. E., Dept. 250-4, Seniority date July 30, 1946. Retired July 1. WEAVER—F. D., Dept. 143-2, Seniority date Dec. 10, 1956. Retired Aug. 1.

### Births

**MAIN PLANT**  
BENAVIDEZ—Son, Anthony David, 7 lbs., 15 oz., born Aug. 6 to Mr. and Mrs. J. A. Benavidez, Dept. 123-0. KIRST—Son, Mark Alan, 8 lbs., 1 oz., born June 25 to Mr. and Mrs. Jim Kirst, Dept. 963-3. WHALEY—Son, Kevin Matthew, 7 lbs., 6 oz., born May 29 to Mr. and Mrs. George Whaley, Dept. 955-2.

### Deaths

**MAIN PLANT**  
EMERSON—Clyde E., Dept. 142-2, Died Aug. 6. Survived by wife, Marian Jean.

## Tighter Control Placed Over Plant Equipment

Tighter control of plant equipment is expected to result from new accountability and inventory procedures inaugurated this week at General Dynamics/Astronautics.

Effective Monday (Aug. 18), responsibility for physical inventories of equipment was turned over to a permanently assigned team of inventory personnel, directed by Frank Jenkins, supervisor in facilities control section, plant engineering (Dept. 250-2).

## Women Organizing Veterans Chapter

Two GD/Astro employees are charter members of a recently organized San Diego chapter, Women's Army Corps Veterans Association. They are Darlene Housley and Betty Lotz, both Dept. 101.

They have issued an invitation to former members of Women's Army Corps (WAC) or Women's Army Auxiliary Corps (WAAC) to join the organization. The group carries out volunteer programs in areas of veterans' welfare, national security, international relations, and plans a number of social events.

Darlene can be contacted on ext. 3731 (first shift) or at 291-0183, or Betty on ext. 3731 (third shift) for more information.

At the same time, the system of Secondary Accountability Custodians (SACs) was dissolved. SACs were previously responsible for inventorying equipment within their departments.

All plant equipment control records will now be maintained by facilities control.

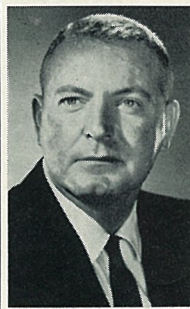
However, department heads retain responsibility for proper care and use of equipment in their areas, for reporting property loss or damage (SP-7-22, Supplement 1), and for adhering to regulations concerning equipment movement or disposition (SP-6-5).

"All departments have been urged to cooperate and assist with the continuing inventory effort, in order to assure results compatible with good business practice and Air Force regulations," Jenkins said.

"Items which are not located during inventory are subject to assessment of liability by the government, or, in the case of company-owned equipment, direct financial loss to GD/Astro."

## Lloyd Olson Named Head of Editorial

Charles T. Newton, General Dynamics/Astronautics director of communication, has announced appointment of Lloyd E. Olson as manager of editorial, replacing G. F. Evans who has left the company.



Lloyd Olson

Olson has been with General Dynamics since 1955, except for a brief term at Ryan Aeronautical Company as a public relations specialist.

Olson holds a bachelor's degree in journalism from State University of Iowa, and a master's degree in political science from Florida State University.

Earlier, he was on the editorial staff of the Jacksonville, Fla., Times-Union.

## AF Gives Support To Value Engineering

(Continued from Page 1)

King, development engineering division), along with representatives of a cross-section of GD/Astro departments.

The seminar is expected to produce major dollar savings on projects explored by the eight teams taking part, and, in addition, the mutual Air Force-GD/Astro enthusiasm for this approach to reducing aerospace procurement costs has resulted in a new level of customer-contractor understanding.

Air Force Regulations (AFR 70-16) makes value engineering provisions mandatory on all contracts over \$100,000, and holds major significance for both GD/Astro and the Air Force.

Lt. Col. R. B. Kelly, AFPRO chief of development engineering, explained that heightened military emphasis on value engineering is closely allied with cost reduction targets assigned the Department of Defense.

"Air Force Systems Command, for example, has savings goals of \$20.56 million in fiscal year 1963; \$40.6 million in FY 1964; \$33.6 million in FY 1965," he said.

## Utility Costs Drive Goes Over Target

(Continued from Page 1)

Centaur test and production facilities.

During the year before the drive utility bills ranged from \$105,000 to over \$130,000 per month. The average saving of some \$22,000 per month has lowered average monthly costs to around \$95,000.



## With Our Deltas

# Pilot and F-106 Pass 1,000 hrs., Same Flight

A pilot of the 456th Fighter-Interceptor Squadron, Castle AFB, Calif., Capt. Ervin W. Barnes, became the first Air Force man to log 1,000 hours in the Convair-built F-106, and his plane was the first F-106 to pass the mark. It was reached on the same training mission.

Capt. Barnes started piling up hours in the Convair jet interceptor late in 1959 after checking out in the F-106 at Castle. It took about 750 missions for him

to reach the record. The bulk of the hours were logged in other F-106s, but both the record-breaking pilot and plane probably will be teamed on future training sorties.

Following his historic flight, he was greeted by Lt. Col. John H. Rogers, who recently became commander of the 456th, and GD/Convair and Hughes Aircraft Co. technical representatives.

Charles W. Stevens, field service rep. for GD/Convair, presented Capt. Barnes with a set of cuff links and a tie clasp with engraved membership in the "1,000 Hour Club," a club with but one lone member so far.

\* \* \*

James W. Day, GD/Convair field service representative, recently was awarded the Air Defense Command Commendation Certificate by the Commanding General of the New York Air Defense Sector for his four years' service with the 539th Fighter-Interceptor Squadron, McGuire AFB, N. J.

The citation accompanying the award cited Day for his "technical knowledge and outstanding devotion to duty, which aided materially in the successful scheduled completion of the F-106 Category III testing, and in the successful completion of two major F-106 modification programs since its acceptance by the Air Force."

He was credited with helping the 539th FIS attain a steadily increasing operationally ready rate while supporting an increased flying hour program.

"He reflects considerable credit on the General Dynamics Corporation and has contributed greatly to the high reputation of the organization and the New York Air Defense Sector," the citation concluded.

\* \* \*

Ten Convair-built F-106 jet interceptors have been assigned to Elmendorf AFB, Alaska, in a temporary deployment to strengthen northern defenses. The 317th Fighter-Interceptor Squadron at Elmendorf has been equipped with F-102s since 1957.

Pilots of the F-106 contingent are all members of the 325th Fighter Wing, McChord AFB, Wash. Lead aircraft in the mid-July flight north was piloted by Lt. Col. Eugene L. Surowiec, whose 498th FIS was transferred to McChord from Geiger Field.

The McChord reinforcements are assigned to the joint Alaskan Command under Lt. Gen. George W. Mundy.

## GD/Convair Art Chief Designs Panorama For NY World Fair

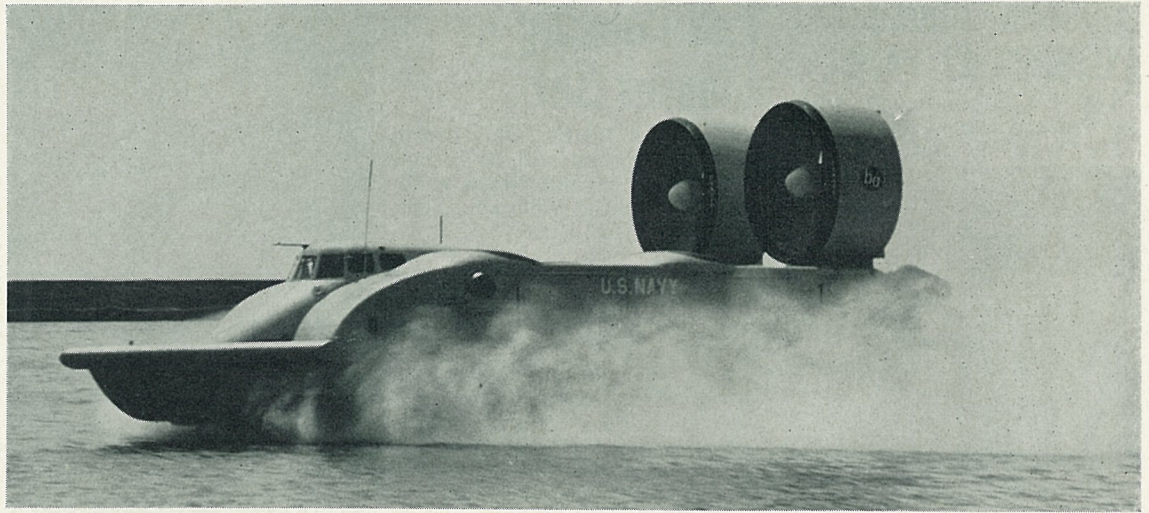
A dramatic panorama of historical scenes, highlighting the past, present, and future of the United States, designed by P. J. Fitzgerald, supervisor of art and editorial section at GD/Convair, may be included in one of the attractions at next year's New York World's Fair.

Three-dimensional environments for a 15-minute ride through the country's history were sketched and designed by Fitzgerald at the request of Cinema Camera Corp., in charge of the feature under a Dept. of Commerce contract. The attraction will be called the United States Pavilion.

First navigators, sea monsters, discovery and settlement of America, early inventions, development of communications and transportation, and projection into the future realms of space are graphically portrayed in the march of history.

Scenery will cover the entire four walls of the ride enclosure. Each side will be 335 feet long and 35 feet high.

Fitzgerald was assisted by Roger Magee of Magee-Bralla, Inc., San Diego design firm, in construction of the 1/4-scale models submitted for approval.



AN AIRY RIDE—Electric Boat division of General Dynamics built four lift fans for this Hydroskimmer, shown riding an air cushion 18 inches above Lake Geneva, N.Y. High speed experimental craft was built for Bureau of Ships by Bell Aerosystems of Buffalo, N.Y.

## FRENCH 'SPEAKING' COMPUTER LEASED

General Dynamics/Electronics—San Diego has leased an S-C 4020 High Speed Computer Recorder to the Commissariat a l'Energie Atomique, Paris, France. Delivery is scheduled for October.

In Paris, the S-C 4020 will "speak" French. Since the French alphabet is the same as the English, no changes will be made in the standard character set built into the recorder. Results will merely appear in the French language on the face of the CHARACTRON<sup>®</sup> Shaped Beam Tube.

Earlier this year, Great Britain's United Kingdom Atomic Energy Unit—the first such system in Europe.

In addition to many industrial S-C 4020 users, units are now in use by the following governmental organizations: Applied Mathematics Laboratory, David Taylor Model Basin, Carderock, Md.; Los Alamos Scientific Laboratory, Los Alamos, N.M.; North American Aviation, Los Angeles, Calif.; GD/Astronautics, San Diego, Calif.; Jet Propulsion Laboratory, Pasadena, Calif.; National Aeronautics and Space Administration, Huntsville, Ala.

## Heller Named To Value Panel

E. D. Heller, General Dynamics/Astronautics manager of value control, has been invited to serve as a regional panelist at the joint Department of Defense-National Security Industrial Association symposium in Los Angeles next month.

The session at Los Angeles' Biltmore Hotel, Sept. 18, is one of five such symposia scheduled this month and next at major U. S. industrial centers.

Purpose of the meetings is to present Defense Department policies and objectives, and industry's views and experience in the utilization of value engineering as a systems management tool.

Assistant Secretary of Defense Thomas D. Morris heads an impressive list of speakers participating. Taking part as an industrial panelist at all sessions is C. W. Doyle, procurement value control administrator, GD/Fort Worth.

## EB Hiring, Goes To 9 Hr. Shift

Most production employees at General Dynamics/Electric Boat went on a basic nine-hour shift this week in order to meet revised submarine delivery schedules.

The shipyard will also hire additional skilled shipfitters, welders, outside machinists, outside electricians, sheetmetal workers.

In announcing the basic nine-hour shift, J. William Jones Jr., Electric Boat president, said a review of immediate and long range production schedules and a careful assessment of the changes ordered by the Navy and their impact on delivery dates showed an "urgent need to increase productivity in order to meet the revised schedules."

## 'Station Keeper' Designed by GD/E Aid to Aircraft in Formation

A new radar system designed by General Dynamics/Electronics—San Diego can pinpoint exact position of aircraft flying close formation in all kinds of weather, or at night.

The Aircraft Station Keeper (ASK) radar system automatically provides position data over a full 360 degrees around the aircraft and gives each aircraft using the system a pictorial display of all other aircraft within the formation.

The compact, low-power system is essentially a combination of transceivers and display devices installed in a "cooperating" aircraft. The two units which make up the system will occupy only 1/4 cubic feet of space, weigh 16 pounds, and have a power drain of 50 watts.

ASK is designed for use in all types of military aircraft, includ-

ing helicopters and supersonic jets and will handle 10 or more aircraft depending upon formation pattern, explained J. B. Gehman, GD/E engineering staff specialist who has spearheaded development. Gehman is presently acting project engineer for the ASK system. Marshall Bear of engineering research has been associated with Gehman on the program.

In addition to position data, the technique can be used to provide information for takeoff, landing, and in-flight rendezvous where a zero range measurement is an important feature. Altitude reference also can be included.

Radar specialists at GD/Electronics indicate the ASK system has a substantial growth potential, since the system is expandable for automatic operation when used with an autopilot.

## GD/E Projects at San Diego Demonstrated For Navy Team

High ranking Naval officers received a one-day briefing on products and capabilities of particular interest to the Naval Air Force at both San Diego facilities of General Dynamics/Electronics the first of this month.

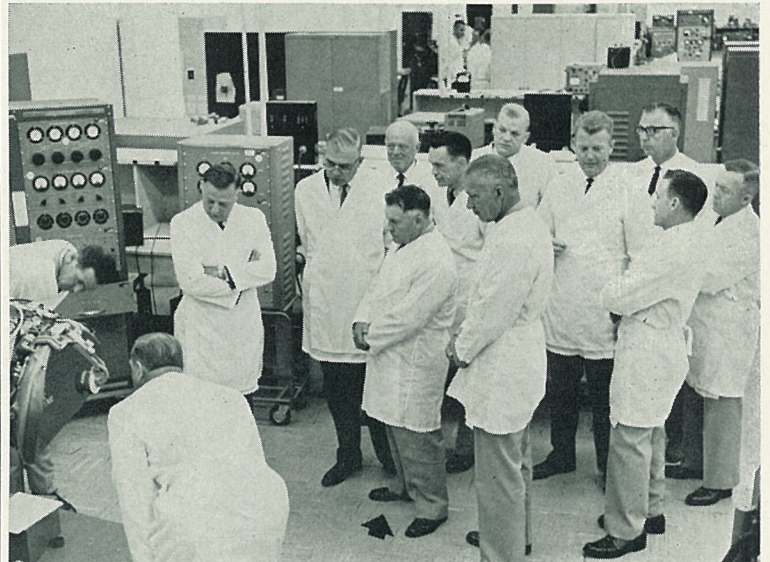
Vice Adm. P. D. Stroop, USN, commander, Naval Air Force, Pacific, headed the visiting team. Others were Capt. N. R. Richardson, USN, deputy, Bureau of Naval Weapons Fleet Readiness Representative, Pacific; Capt. B. K. Beaver, contract support officer, staff, BUWEPSTFLT READ REP PAC; W. S. Burlem, chief engineer, engineering division, staff, BUWEPSTFLT READ REP PAC; Cdr. R. A. Evans, BUWEPSTREP, San Diego; Cdr. E. Frankiewicz, assistant BUWEPSTREP; Lt. Cdr. J. D. Ness, operations, CIC, CCA, ECM, training officer, staff, COMNAVAIRPAC; Lt. Cdr. W. H. Todd Jr., technical supervisor, instruction team,

staff, COMNAVAIRPAC.

GD/E General Manager John L. Lombardo outlined the division's functions at the general conference preceding briefings on specific projects now under way at both Plants 1 and 2.

Such newly-developed research and engineering projects as Aircraft Station Keeper Radar, Short Pulse Radar, Terrain Following Radar systems at Plant 1 and data products, and their Naval applications, at Plant 2 came under scrutiny. The Naval team toured assembly areas at both plants during the afternoon.

GD/E men conducting the briefings and tours included J. L. Brooks, J. B. Gehman, R. R. Appgar, J. H. Thompson, D. C. Newlon, R. F. Schillinger, A. H. Wisdom, J. C. Mitchell, J. H. Redman, J. W. Colvin, J. G. Melvin, C. V. Shannon, R. A. Glaeser, J. N. MacInnes, requirements engineer-Navy, coordinated arrangements.



NAVAL INSPECTION—Examining REINS radar assembly in clean room of GD/E-San Diego during one-day visit are Vice Adm. P. D. Stroop, USN, (arrow); Capt. N. R. Richardson, USN, (standing at Admiral Stroop's left); Capt. B. K. Beaver, USN, (at far left bending over assembly), and other Naval visitors. J. L. Brooks, manager of engineering, and J. H. Thompson, manager of operations, conducted tour of assembly area.



Reading from the top down: (1) Brig. Gen. F. W. Gillespie, 86th Air Division commander, receives F-102 lapel pin from O. B. Johnson, GD/Convair field service rep, following checkout in interceptor at Ramstein Air Base, Germany. In center is Lt. Col. Gordon H. Scott, 526th FIS commander.

(2) Capt. Ervin W. Barnes received "Thousand Hour Club" membership from Lt. Col. John Rogers, 456th FIS, commander, after both he and his F-106 passed mark. At left is Charles W. Stevens, GD/Convair rep at Castle AFB; at right is Lee Williams of Hughes Aircraft.

(3) GD/Convair field reps J. E. Dodge, left, and H. P. Vinz, right, renew acquaintance with Maj. Gordon Reese at Camp New Amsterdam, Netherlands, recently when he reached 1,000-hour mark in F-102.

(4) GD/Convair's Jim Day is assisted by Lt. Col. Duncan C. Myers, commander of 539th FIS, in hanging award Day received in recognition of service with F-106 squadron.



## CONGDON, HOINES ASSIGNED AT VAFB

Two key appointments within General Dynamics/Astronautics' Atlas Weapons System project at Vandenberg AFB were announced earlier this month by W. L. VanHorn, vice president and program director.



G. G. Congdon replacing D. L. Fagan who was previously appointed director of GD/Astro's Pacific Missile Range operations. A. H. Hoines has assumed new duties as AWS launch operations manager-PMR.

Congdon was born in Dallas, Texas, and attended San Diego public schools and the Universities of Wisconsin and Minnesota. Following graduation, he took additional studies at University of California, Berkeley.

He joined GD/Convair as a flight analyst in 1948, transferring to the Model 7 (Atlas) program in 1956 as a research engineer. At GD/Astro he subsequently served in various engineering capacities, including chief engineer-design support.

Hoines is a University of Minnesota graduate. He served as a naval aviator in 1942-45, and again in 1952-54 with the rank of lieutenant commander.

His General Dynamics service dates from 1955 when he joined GD/Convair, transferring to GD/Astro as senior flight test engineer at Vandenberg AFB in 1959. In 1961 he was named test conductor there.

## Wives Will Sponsor Regular Bowling

Astronautics Wives' Club will again sponsor an all-wives bowling league meeting at 9:30 a.m. each Tuesday at Clairemont Bowl, according to Director Ann Ragusa.

Initial league action begins Sept. 17.

All wives are invited to turn out. Advance registration is possible through regular ARA bowling entry forms now available at all employee services outlets. However, no advance registration or previous bowling experience is required.

## Last Performances Of 'Heiress' Slated

Final performances of Astro Players' production "The Heiress," a period drama, will be Friday and Saturday (Aug. 23, 24) at 8:30 p.m. in ARA Clubhouse, to end a seven show run.

Friday (Aug. 23) is "Family Night," with youngsters admitted free when accompanied by parents. Usual donations are \$1 for adults, 50 cents for juniors.

## Fall Dancing Classes Set

Plans for ARA's fall ballroom dancing program will be formulated at an organizational meeting to be held at 7:30 p.m., Sept. 16 in ARA Clubhouse.

"We will have a program consisting of 12 one and one-half hour lessons," said Commissioner Ludy Moeller. "Total cost will be \$9 per person."

Just what level of instruction—beginning, intermediate or advanced—will be offered, will be determined at the meeting.

"It is possible that more than one evening per week will be available to us," Moeller added. "We need at least 17 couples in order to operate a class."

A complete program will be outlined and class assignments made at the September session.

## City College Classes Begin

Seven San Diego City College courses will be offered to employees at GD/Astronautics' main plant beginning the week of Sept. 16, with registration scheduled at first class meetings.

Classes will meet in Bldg. 17, Plant 71, and are coordinated by GD/Astro educational services (Dept. 130-3). Pre-registration is handled by Laura, ext. 1935, who can also supply additional information.

Class titles, instructors, meeting days and times, and room numbers are: Electronics (45), Herm Reichert, Tuesday and Thursday, 4:30-7 p.m., Room 8; Electronics (46), Bob Boring, Monday and Wednesday, 5-7:30 p.m., Room 9; Electronics (46), Dennis Suchecki, Tuesday and Thursday, 2-4:30 p.m., Room 9. Also, Supervision (23) (Technical Writing), Bill Stewart, Tuesday and Thursday, 5-7 p.m., Room 2; Mathematics (17A) (Electricity and Electronics), Tom Ruse, Monday and Wednesday, 4:30-7 p.m., Room 2; Industrial Inspection, Bob Grunner, Monday and Wednesday, 4-6 p.m., Room 8. Elementary Inspection (Detail) will also be offered.

## Weight Engineers Extend Invitation

J. E. Muller, GD/Astronautics Dept. 663-5, and chairman of San Diego chapter, Society of Aeronautical Weight Engineers (SAWE) invites interested personnel to attend the group's next meeting Aug. 23.

The session will be held at Luby's Restaurant, Pacific Beach. Social hour begins at 6:30, with dinner at 7 p.m. Speaker will be George Cota of Ryan, discussing "Flexible Wing Development."

## Fish Club to Present Awards For Catches

Next meeting of ARA Fishing Club will be held at 7:30 p.m., Sept. 4 in ARA Clubhouse.

Program will include presentation of button awards for catches made during August. Door prizes are planned.

Club jacket patches are expected to be ready by meeting time.



WATCHED — Jan Greer (Astro Dept. 124) was recently named "Miss Second Glance of 1963" by International Society of Girl Watchers. She appeared Aug. 20 on Steve Allen Show in Hollywood. — Photo by Joe Kayada, Astrolens.

## Employee Services Offers Discount on Volumes by Ehrlicke

Employee services at GD/Astro has announced a special service to employees interested in acquiring all or part of a three-volume set of space flight books authored by Krafft Ehrlicke, Astro's noted space expert.

Two volumes are on the market, while the third is being published.

Employee services is ordering 20 copies of Volume I (Environmental and Celestial Mechanics) at an approximate list price of \$16 each. Employees may buy it at a 20 per cent reduction. A \$5 deposit will hold a copy until delivery is made, at which time the full purchase price, less discount, must be paid.

Volume II (Dynamics) will be ordered, if sufficient interest is shown. Approximate list price is \$30, with a 20 per cent reduction available to employees. Those desiring this volume may register with employee services, Bldg. 8, Plant 71. A minimum of 20 copies must be ordered before the discount is available.

Details will be available later on Volume III (Operations).

## Jr. Bowlers Sought For Saturday Loops

The call went out this week for youngsters, boys or girls from 8 through 18, interested in joining ARA-sponsored junior bowling leagues.

Leagues will begin rolling Saturday, Sept. 21, and bowl at 10:30 a.m. each week. Youngsters will be placed in leagues by age groups, in bantam and junior-senior classes.

At present only leagues planned will roll at Clairemont Bowl. However, ARA will consider sponsoring leagues at other locations, if interest warrants.

## ARA-CRA Camera Club Will Meet in Park

The joint ARA-CRA Camera Club, open to all GD/Astro, GD/Convair and GD/E employees interested in still photography, will meet Sept. 1 at 7:30 p.m. in Balboa Park's Photo Arts Bldg.

Program will consist of a workshop session concentrating on lighted glassware and still life.

## ARMY RESERVIST TAKES TRAINING

Robert C. West, master scheduler analyst in GD/Astro Dept. 362-3, recently completed an Army Reserve training stint at Fort MacArthur, Calif. West, a master sergeant, was assigned to the personnel section of the Army Reserve Training School for his two-week active duty period.

## Skaters to Visit Big Bear Lake For Indian Summer Weekend

An invitation to "Indian Summer at Big Bear Lake" has been issued to all GD/Convair, GD/Astro and GD/E folk by the joint ARA-CRA Ice Skating Club.

The event is scheduled Sept. 20, 21, 22 at Big Bear's Wawona Lodge, site of similar outings over the past five years. Accommodations include hotel room with private baths for two, three, four or five persons, and house-keeping cabins for family groups.

Weekend activities will include swimming in Wawona's pool, hiking, horseback riding, cycling, ice skating, and an informal dance (with midnight pizza snack) on Saturday evening.

Per person price for the package of two nights' lodging and all meals is \$12 (half price for children under 8 years). Meals again are under direction of Gil Hutter, Prophet Co. manager at GD/Astro.

Reservations (limited to a total of 100 persons) are being accepted.

## Club Seminars Start in Sept.

A trio of management seminars, open to all salaried employees at GD/Astronautics, GD/Convair and GD/Electronics are set to open in mid-September.

Sponsored by Astro's Management Club, the seminars are a part of a now-popular management development program that has drawn over 700 participants in the past five years.

Individual seminars will be held at Plant 1, Plant 19 and Plant 71 as interest dictates. Opening dates will be Sept. 17-18-19. Three different seminars are planned entitled: Principles of Managing; Issues in Modern Management; and Case Studies, Management Practice and Policy. The last two are 12-hour seminars, while the first continues for 20 hours.

Sessions will be held from 5 until 7 p.m. one night per week.

Individual registration sheets and information on the program will be provided club members. Other salaried employees at Convair and Astro may contact George Hunter, ext. 1576, Plant 19, for information.

## Explorers Schedule Weekend Outings

Plans for two weekend outings have been announced by ARA Explorers Club.

On Aug. 31, a group of the club's heartier members will start a weekend back-pack expedition in the Santa Rosa mountains.

A less arduous trip is planned Sept. 7, with a one-day trail hike.

Information on Explorers Club is available from ARA Commissioner Herm Reichert, ext. 2607, or Paul DuPre, club president, ext. 4448.

## ARA Hi-Fi/Music Club Schedules Concert

Another in ARA Hi-Fi/Music Club's series of free recorded concerts, this time "a night at the opera," will be presented in the group's ARA Clubhouse studio at 7:30 p.m., Aug. 28.

Featured work is a stereo recording of Rossini's "Barber of Seville" with Maria Callas, soprano, and Titta Gobbi, baritone, in leading roles. Others in the cast include Luigi Alva, Fritz Ollendorff, Gabriella Carturan and Mario Carlin.

## Salvage Schedule For Aug., Sept. Set

Salvage yards at GD/Convair and GD/Astronautics will both take a holiday over the Labor Day weekend. There will be no employee sales at either yard on Saturday, Aug. 31. Regular alternate Saturday schedule will resume the following week.

Schedule is:

GD/Astro—Aug. 24, Sept. 7.  
GD/Convair—Sept. 14.

ed through Sept. 13 at employee services offices at Plants 1, 71, and 19, with full price payable at time of sign-up.

Additional information is available from Barbara Gilliland, Astro Blades president, GD/Astro ext. 4041.

## Husband-Wife Team Scores in Garden Show

The husband-wife team of Charles (GD/Astro Dept. 759) and LaVonne (GD/Convair Dept. 2) Splinter dominated the joint ARA-CRA Garden Club summer show this month in Balboa Park's Floral Association Building.

They won four Best of Show awards (best large dahlia, best medium dahlia, best overall dahlia, best grapefruit), plus four first place, and six second place awards.

More than 1,500 visitors viewed the show's 150-plus entries, which included over 1,000 dahlia blooms, in addition to fruits, vegetables, arrangements and children's entries.

Largest dahlia entered was a white 14-inch Lulu Pattie nurtured by Mr. and Mrs. Clayton Finley, GD/Convair Dept. 14-3, who won a total of 10 ribbons.

ARA Club President Arnold W. Carroll (Dept. 141-2) and Mrs. Carroll carried away 31 ribbons and two Best of Show awards for best arrangement, and smallest dahlia.

Ten blue ribbons were among the 27 won by Mr. and Mrs. Albert Hornby, GD/Astro Dept. 972, while Henry Boyd, CRA Club president (Dept. 171) and his wife garnered 25 ribbons including Best of Show awards for best miniature dahlia and best tomato display.

Other Best of Show winners were Carolyn Buman, GD/Astro Dept. 341-0 (best onion display), C. V. Spear, GD/Astro Dept. 141-2 (best apple display), Jean Henderson, wife of ARA Commissioner Everett Henderson, Dept. 140-1 (best corsage), and Sherri Files, daughter of GD/Astro's Phyllis Files, Dept. 953-5 (best children's display).

Charles Barksdale, Dept. 15; Eugene Zimmerman, Dept. 401; Dennis Zimmerman; Bene Anello, Dept. 204, were GD/Convair blue ribbon winners.

Blue ribbon recipients from GD/Astro were Joe Bores, Dept. 986; O. J. Williams, Dept. 836; C. V. Spear, Dept. 141; Gale Short, Dept. 972; W. K. Spann, Dept. 953; Mary Short, Dept. 972; Richard Allandell, Dept. 781; Nancy Allandell. Judges were Mr. and Mrs. R. M. Middleton of San Diego County Dahlia Society; Mr. and Mrs. J. W. Troxell, County Rose Society; Mrs. Jean Kenneally, San Diego Floral Association.

In addition to ribbons, Best of Show winners received silver serving ladies; first place winners, Hydromix garden sprayers; seconds, flower arrangement bowls; and thirds, redwood planting tubs.

## Dynamics Men Active in SAVE

General Dynamics men nominate the slate of officers elected recently by San Diego Chapter, Society of American Value Engineers (SAVE).

A. S. Freedman, GD/Electronics manager of design assurance is president; M. D. Weisinger, GD/Convair, secretary; G. J. Bartolomei, GD/Astro, treasurer.

The group, organized about two years ago, now boasts a membership of nearly 70, of which two-thirds are General Dynamics employees.

Appointed to head local SAVE committees for the coming year are GD/Astro's E. A. Lindem (program), S. L. Albert (publicity), Frank Urban (membership), Wells Christie (rules and bylaws).

Bill Garrett of GD/E is chairman of the ticket committee, and a publications group is headed by A. R. Hermann of GD/Convair.

San Diego SAVE chapter is open to all interested persons, and membership is not restricted solely to professional value engineering personnel.

E. D. Heller, manager of value control at GD/Astro, is director for SAVE's southwest region, and was former SAVE national secretary.



CAPE CONTROL—Newly-elected officers of AMR Astro Wives Auxiliary are shown following installation at dinner-dance. They are, from left, Mrs. R. E. Flanagan, corresponding secretary, Mrs. E. J. Hecker, treasurer, Mrs. R. H. Becker, president, Mrs. W. E. Apfel, recording secretary, and Mrs. R. S. Gehee, first vice president. Mrs. K. N. McCarthy, second vice president, not present.



# Sports & Recreation

## Entry Forms For ARA Bowlers Carry List of All Leagues

Astronautics Recreation Association's largest participant activity, bowling, is preparing for its most active period, winter league.

Entry forms for the many ARA-sponsored leagues are currently available at all employee services outlets. They include a complete listing of all scheduled leagues for the winter season, plus those that can be scheduled, if sufficient interest is shown.

The latter represents a survey

of all bowling establishments in the San Diego area which can handle ARA leagues, if employees desire them. That is, a league can be started at any of the listed locations when a minimum of six teams are available.

Winter action will begin the week of Sept. 16 and continue until late spring.

Leagues set to operate include those on Tuesday, Wednesday, Thursday and Friday nights at Clairemont Bowl; on Tuesday and Wednesday nights at La Mesa Bowl; Tuesday nights at Parkway Bowl; and Wednesday nights at both Frontier and Poway Bowl. In addition, there is a swing shift loop meeting after work on Fridays; a Wives' Club league on Tuesday mornings at Clairemont; and a junior program for youngsters Saturday mornings at Clairemont.

Other bowling establishments have openings Monday through Friday nights.

Every effort will be made to place teams in desired leagues, but more popular leagues will fill quickly. Bowling commissioners will have no alternative but to place late-entering teams in available leagues.

### QC ENGINEERS TAKE COURSE

Robert D. Woodward, GD/Astro senior quality control engineer, and Maynard A. Wolfe, asst. test lab group engineer, were among 229 recent participants in an industrial reliability and statistical methods course conducted by UCLA.

## Astro Card Players Earn Third Place in Tournament at L.A.

Four GD/Astro employees comprised the team winning third in the recent American Contract Bridge League summer national tournament held in Los Angeles.

They were Helen Grijalva, Dept. 596; Pauline Blough, Dept. 324-4; Marvin French, Dept. 376-5; and Paul Lewis, Dept. 101. All are members of ARA Bridge Club's "Astro Aces" team which earlier won the San Diego Industrial League championship.

ARA Bridge Club meets for play each Friday at 7:30 p.m.

This week (Aug. 23) the group plans a special Master Point event, to be played in GD/Astro executive dining room. First place winners will receive a full master point, with second and third place winners receiving one-half and one-third point respectively.

On Aug. 30, regular meetings will resume in ARA Clubhouse.

## GD/Astro Actors in 'Desert Song' Will Reappear in 'Molly Brown'

Three GD/Astronautics men who appeared in Starlight's "Desert Song" earlier in the season will again be in evidence when the "theater under the stars" opens "Unsinkable Molly Brown" next week.

(Discount tickets for a performance of "Molly" will be available through GD/Astro employee services at a later date.)

Les Cozzens, Dept. 989, who played French Captain Paul Fontain in "Desert Song" will get a "promotion" for "Molly." In the up-coming show, he's still French, but this time a prince!

John Murphy, Dept. 521-6, for the second consecutive year Starlight's makeup director, practiced grease paint art on himself to fill the role of the sinister Hassi in "Song." He will age a few years to become Molly's father, Shamus, next week.

Larry Peterson, Dept. 989, will leave the role of Mindar, the Riff, to play a priest in "Molly."

Peterson is a member of the original Starlight company, and appeared in every production from 1946 through 1952. At GD/Astro, he's a senior electronic design engineer.

Cozzens, also a senior design engineer and Starlight veteran, has the distinction of playing more leading roles than anyone else during the first eight years of the summer programs. He played his "Desert Song" role initially in Starlight's 1948 production.

A back-stage makeup assignment was the height of Murphy's ambition when he originally joined the company. He first ventured before the footlights as "Can-Can's" Boris; this year will be on stage in all four Starlight shows.



CUT-THROATS ALL—Trio of GD/Astro employees took to boards this summer in Starlight musicals. Shown in "Desert Song" garb are Larry Peterson, left, Les Cozzens, and John Murphy. All will also appear in up-coming "Unsinkable Molly Brown." — Photo by Klaus Bythiner.

## Golf Tourney Entries Close

Entries close Friday (Aug. 23) for ARA Golf Club's 1963 Plant Championships scheduled Sept. 8, 15, 21 and 22 at Carlton Oaks Country Club.

Employee services outlets at Plants 71, 19, 1, Sycamore and Rose Canyon are accepting entries. The tournament is organized for match play by handicap flight.

Entrants must be members of ARA Golf Club and have a current club handicap. They must have participated in at least three ARA-sponsored golf tournaments since the 1962 plant championship.

Entry fee is \$5 including a \$3.50 first-match greens fee which will be forfeited if the entrant fails to appear on opening day. Players will pay their own \$3.50 fees for subsequent rounds.

## Public Invited To Horse Show

A horse show, billed as the season's largest and most colorful, will be held in ARA Riding Club arena in ARA Area from 9 to 5 p.m., Sunday (Aug. 28).

Twenty classes covering all western events are planned, with the public invited to attend free of charge.

On Aug. 27, Riding Club will hold a business meeting at 7:30 p.m. in ARA Clubhouse. Then, Aug. 28, the club's Junior Riders (members' youngsters, 10-18 years old) will hold a hayride and wiener roast in ARA Area.

A members-only field trip to Cuyamaca Mts. is planned the weekend of Sept. 14.

## ARA Travelers Head For Vegas

Travelers participating in ARA's recently announced bus trip to Las Vegas will head for a different "port" when they get under way Sept. 20.

Accommodations for the current trip will be at the new Tally-Ho Hotel in the heart of the Las Vegas "strip," which offers golfers a 9-hole, par-3 course.

The Sept. 20-22 trek has a package price of \$25 per person, including bus transportation and double-room accommodations. For \$2 per night extra, single rooms can be arranged.

Reservations are now being accepted at employee services, Bldg. 8, during regular sales hours.

## Astro Man to Present Two Papers in Tokyo

L. L. Fontenot, design specialist in charge of advanced methods in GD/Astronautics dynamics group (Dept. 541) will travel to Tokyo next week to deliver two papers at the 5th International Symposium on Space Technology and Science, Sept. 1-7.

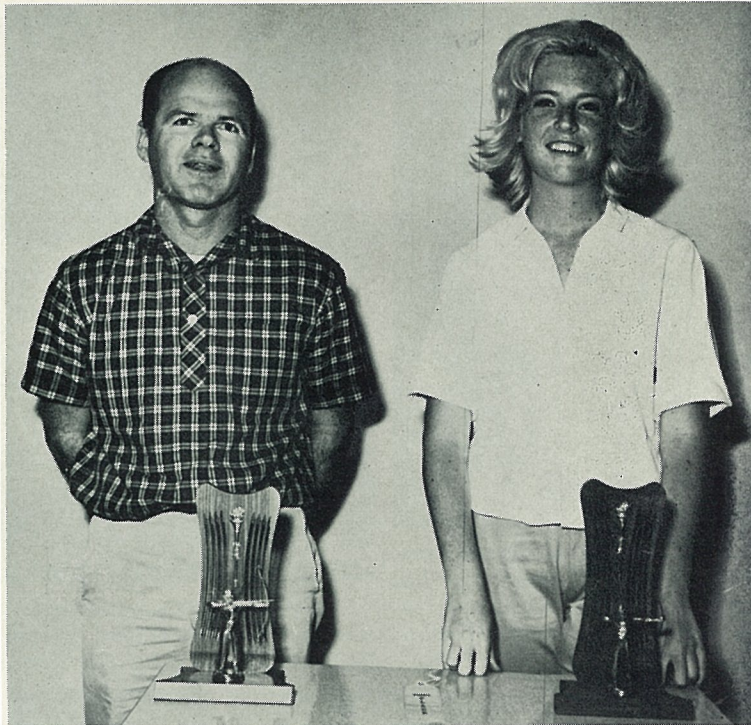
Scheduled for presentation are Fontenot's "Free vibration of thin elastic pressurized cylindrical shells filled with a perfect and incompressible liquid having a free surface," and "Flexural vibrations in uniform beam columns according to the modified Timoshenko theory."

## Softballers Finish In Third Position

Astro softballers playing in San Diego Open League competition finished in third spot after a 6-5 win over El Cajon Hawks. Roy Neie, winning pitcher, and Dick Leslie led Astro offense with two hits each in the final skirmish.

In recent exhibition tilts, Astro scored three wins and a tie against Lakewood, and dropped a 4-0 game to GD/Pomona. Bob Lange hurled two wins, and Neie the other.

In coming weeks, the Astro team will play in ARA and SCMAF district tourneys.



LEADING BOWMEN — Lee Anderson, left, and Linda Stone, daughter of ARA Commissioner Al Stone, placed second and third in recent handicap archery shoot. First place winner was Don McMillan.

## ARA Archers Begin New Series of Matches; Held Each Thursday, 7 p.m., on Ball Diamond

ARA Archery Club, which meets each Thursday on ARA softball diamond, has completed a handicap tournament at 20-yard range, and begun another to be shot variously at 10, 15, 20, 25 and 30 yards.

The first series was six weeks in length, during which time archers established handicaps applied at the final trophy match.

Meetings for the new series are at 7 p.m., with handicaps to be established over an eight-week period. GD/Astro archers have been invited to test their skill, and need participate in only two preliminary shoots to qualify for the final round.

The group looks forward to setting up a permanent range at the eastern edge of ARA Area, where grading is now in progress. ARA Commissioner Al Stone said some archery equipment is available for use of employees who would like to try their hand at the sport.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

★ ★ ★

**ARCHERY** — Target shoots each Thursday, 7 p.m., ARA softball diamond.

**ASTRO LENS** — Meets 7:30 p.m., Sept. 1, Photo Arts Bldg., Balboa Park. Workshop program.

**BALLROOM DANCING** — Organizational meeting, 7:30 p.m., Sept. 16, ARA Clubhouse.

**BOWLING** — Applications for ARA winter leagues available at employee services outlets.

**BRIDGE** — Play nights Fridays, 7:30 p.m., in executive dining room, Aug. 23; in ARA Clubhouse Aug. 30 and after.

**DISCOUNT TICKETS** — Circle Arts' "Can-Can," Aug. 25. Matinee at 30% discount; 20% off on evening show. Tickets at employee services.

**GARDEN** — Joint ARA-CRA club meets 7:30 p.m., Sept. 4, ARA Clubhouse.

**GOLF** — Plant championships, Sept. 8, 15, 21, 22, Carlton Oaks. Entries accepted at employee services outlets through Aug. 23.

**HI-FI/MUSIC** — Recorded concert, 7:30 p.m., Aug. 28, ARA Clubhouse. Rossini's "Barber of Seville."

**HO RAILFANS** — Contact Dave Fyffe, ext. 3189, for information on new ARA layout.

**ICE SKATING** — Indian Summer Weekend at Big Bear, Sept. 20-22. \$12 per person includes lodging, meals. Provide own transportation. Reservations at employee services offices.

**LAS VEGAS TRIP** — Bus trip plus two nights at Tally-Ho Hotel, Sept. 20-22. \$25 per person. Reservations at employee services, Bldg. 8.

**RADIO** — Meeting Aug. 28, 7:30 p.m., ARA Clubhouse. Speaker is Tom Hemphill (W6PAN) discussing GD/Astro's radio telescope.

**RIDING** — Lessons start Sept. 8, 11 a.m. to noon, Bonita Valley Farms. \$15 for 8-week series. Applications at employee services outlets.

**SAILING** — Seamanship lecture, 7 p.m., Aug. 26, ARA Clubhouse.

**TOASTMISTRESS** — Serra Mesa Club meets at 7:30 p.m., Sept. 9, ARA Clubhouse. Wives, women employees welcome.

## Mgt. Club Forms Bowl Leagues

Organizational meetings have been scheduled next week for two GD/Astro Management Club winter bowling leagues.

Participants in a men's 780-800 league will meet at 6:30 p.m., Aug. 26 at Mission Valley Bowlero, with play opening Sept. 9.

Same time, at same place, but the following day (Aug. 27) is slated for the organizing session of Management Club's 700 mixed league. Play in this series opens Sept. 10.

Plant 71 contacts for men's league are Forest Erwin, ext. 2216, or Mike Edwards, ext. 3509. At Plant 19, Fred Bloshies, ext. 1587, or Mike Brooks, ext. 410, can supply information. Erwin and Bloshies are also contacts for the mixed league.

Still other leagues may be organized if interest warrants.

## 30 Pct. Discount Set On Matinee Tickets

Reduced price tickets to Circle Arts Theatre's production of "Can-Can" starring Broadway and Hollywood headliners Ricardo Montalban and Roberta Linn, are now available to GD/Astro employees.

ARA has arranged 30 per cent discounts on tickets for the Aug. 25 matinee (curtain time, 2:30 p.m.), with 20 per cent mark-downs available on seats for the 8:30 performance the same date.

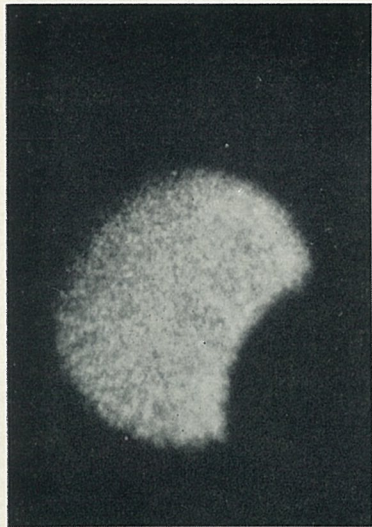
Tickets may be purchased at employee services, Bldg. 8, during regular sales hours.

## Sessions to Explain Personnel Manual

GD/Astronautics "Personnel Administration Manual," (replacement for the former "supervisor's manual") is being distributed to supervision through a series of two-hour instruction sessions.

Supervisors who have not already attended the class have been encouraged to do so in the near future. George Merrill, educational services, ext. 1933, will schedule participation.





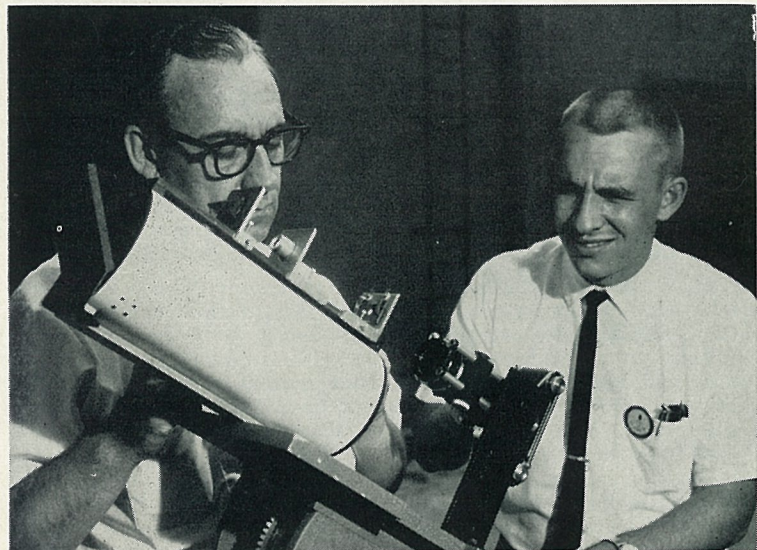
**ECLIPSE**—Photo shot at precisely 2:03 p.m. coast time July 20 with special equipment assembled at GD/Pomona, shows how sun looked during eclipse.



**SUN CHASING**—American Airlines took more than 70 newsmen, photographers and scientists to 35,000 feet July 20 in a 990 Astrojet, built by GD/Convair, giving them a front seat for



eclipse of sun. At right is Frank Hurley of New York Daily News aiming camera. Flight was over Bangor, Me. Takeoff photo shows Astrojet similar to one used for eclipse flight.



**VIEWER**—Recent partial eclipse of sun as seen at Pomona was photographed with aid of solid state image converter developed by GD/Pomona's physics and infrared section. Image converter panel is located immediately in front of camera. Geoffrey C. Knight, senior physicist, left, and Robert MacFarlane, inspect equipment.

## 'Solid State Image Converter' Used to Photograph Eclipse

The recent eclipse of the sun was photographed at GD/Pomona with aid of a "solid state image converter" developed and constructed by the physics and infrared section.

"It is believed that this is the first application of a solid state device for purpose of photographing a high intensity source," R. J. Sneed, physics and infrared section head, said.

The device used for photographing the eclipse at Pomona is a visual-to-visual converter. On the same principle a converter can be constructed which produces a visible display of objects observed in the ultraviolet or infrared portion of the spectrum.

Advantages of this type of device and its potential applications are numerous. An object is viewed at all times indirectly and output intensity at the observer side can be limited to tolerable levels. This affords protection to any detector—human eye or photoelectric sensors. The converter also has inherent light amplifi-

cation capabilities which permit observation of very low intensity sources without affecting the high intensity protection.

Basic configuration of the image converter is a sandwich consisting of a photoelectric layer on the object side and an electroluminescent layer on the observer side. An opaque film between these two layers prevents optical feedback.

Voltage is applied to both sides of the sandwich by means of thin metallic electrodes. The entire unit represents a network in which the incident light controls, locally, the resistance in the photoelectric layer. This in turn controls the field across the electroluminescent layer on the observer side, and similar parameters control resolution of the converter.

The image converter is presently being developed at GD/Pomona for the U. S. Army Quartermaster Corps.

## Production Steps up at New Plant Of Electro Dynamic in Avenel, N.J.

Wheels are turning at Electro Dynamic Division of General Dynamics Corporation this month as production steps up in the new home plant at Avenel, N.J.

Equipment was moved in and positioned by the end of July and first cuts made as the General Dynamics division swung back from the April fire which razed its former plant at Bayonne, N.J.

The Avenel plant is in limited production now and will be in full production this fall, said Raymond B. Carey Jr., president.

Electro Dynamic produces electric motors and generators for defense and industry.

In reviewing the strides made

in the weeks since the fire, Carey stated that in the long run the division will be a greatly improved operation.

"Starting fresh, we have done everything possible to improve work flow, materials handling and production methods.

"I'm sure this will pay off in better service for all our customers."

Manufacturing operations are carried on in five major buildings of the Avenel plant, acquired from Art Metal Corp. Office area is on the second floor of Bldg. 1 and executive offices are located in the administrative building at the entrance to the plant.

Aside from repainting, little renovation was needed in the main plant area. The Bldg. 1 office space was refurbished and air conditioned.

Floor space was being blocked out for Electro Dynamic's operations even as Art Metal was moving its equipment out. And, layouts were firmed to meet schedules for unloading machinery from railroad cars at one end of the plant.

Milton Hangen, GD/Convair industrial engineer, was recruited to help lay out the plant. Working with George Dillin, chief industrial engineer for Electro Dynamic, and Mike Yackmetz, assistant plant superintendent and their

staffs, Hangen started with bare floor space. All departments outlined their functions and requirements, and shifted templates back and forth on the master plan to try out various arrangements for the most efficient layout of operations.

Everyone put in long hours and bent every effort to get the job done as quickly as possible. Hangen, a 30-year General Dynamics man, said that he had the utmost cooperation from every person at Electro Dynamic, and thoroughly enjoyed his six weeks at the sister division.

Carey, in a letter to GD/Convair President J. H. Famme, commended Hangen for his assistance, "Thanks so much for sending us Milt Hangen. His services in connection with the layout of our new facility at Avenel were invaluable."

All GD divisions gathered together to help put Electro Dynamic back into production. Nearly three-fourths of needed machining tools and office equipment was sent from other GD plants all over the country. The balance was made up of a small number of items salvaged from the fire; specialized tools made by Electro Dynamic itself; and other standard machine shop tooling, not obtainable elsewhere, purchased new.

## Adv. Products Moves East

Advanced Products, developer and distributor of Dynapak metal forming machines, has been transferred from San Diego to Electro Dynamic Division at Avenel, N.J.

Manufacture, engineering, administration, and sales of Dynapak will be assumed by the New Jersey division. Up until now, actual assembly of the revolutionary high-energy-rate metalworking machines had been subcontracted to other firms.

The present move will place Dynapak closer to the major Eastern market, explained R. B. Carey Jr., Electro Dynamic president.

Advanced Products personnel transferred to Electro Dynamic jurisdiction include the entire sales staff under Warren G. Mang, general sales manager, who had been based at New York.

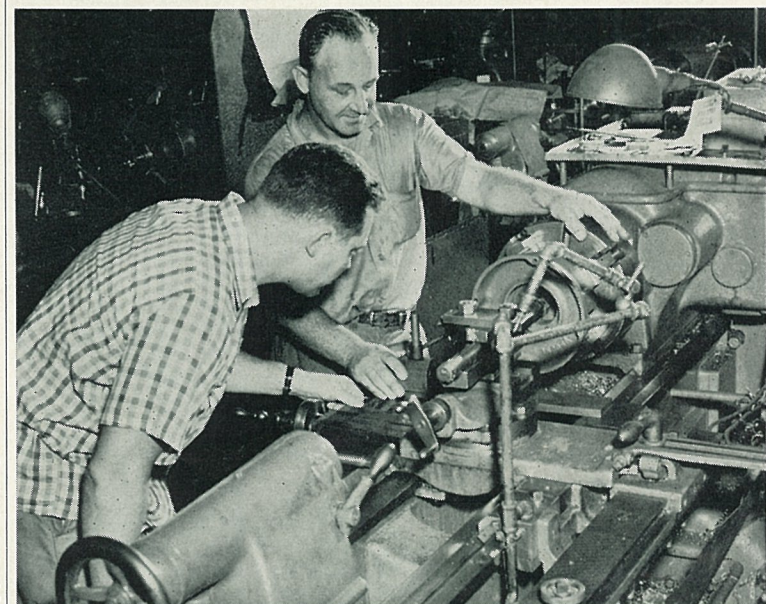
Sales representatives will keep their present assignments in different sections of the country. They are: T. J. Critton, Cleveland, Ohio; M. H. Stevens, Los Angeles, Calif.; I. J. Uslander, Chicago, Ill.; R. J. Wagner, New York City.

Others going from San Diego to the East Coast division are Milton Chanin, chief engineer; B. C. Dunn, service manager; S. W. Gilberg, manager application engineering; A. F. Stratton, project engineer. R. A. Kieffelhorst, chief of operations since 1960, will integrate manufacturing processes at Electro Dynamic.

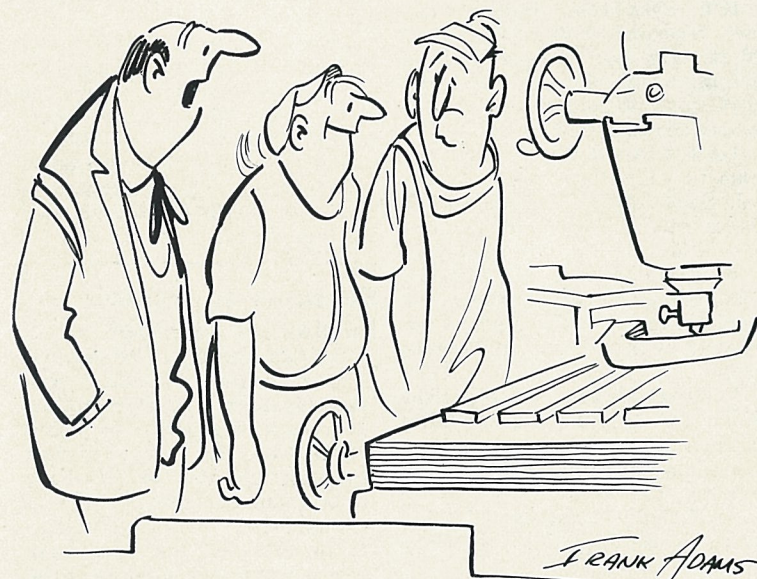
Advanced Products department, which has been located at the San Diego seaplane ramp since early 1961, has been under direction of M. J. Gallagher, general manager since early last year. Both Gallagher and Mang have been with the facility since its formal establishment in 1958.

The Dynapak project, which resulted in the unique concept of metalworking machine, began at Pomona, Calif., with a two-person staff in 1955. At its peak, the facility had an employment of 65 persons.

General Atomic Division of General Dynamics Corporation, which has shared the ramp building at San Diego the last few months, will expand into space vacated by Advanced Products.



**COMING BACK**—In top photo, Inspector Herb Bracket of Electro Dynamic checks machine operation with Jim Hoffman at Peterson Tool & Die Co., Staten Island. Below, working out details for ED's new manufacturing facilities are Mike Yackmetz (asst. plant supt.), George Dillin (chief industrial engineer), Milt Hangen (on loan from GD/Convair), and Jim Ernst (sales dept.).



"Can you put Mrs. Brown on a machine that will give her something to think about while she talks?"



## All-Automatic Escape Developed For F-111

The new F-111 tactical fighter's two-man crew will be provided with the most advanced escape and survival protection system yet devised, according to a press release from the Air Force Systems Command's Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

McDonnell Aircraft Corporation is developing the system. General Dynamics/Fort Worth is prime contractor for the fighter.

Should emergency escape become necessary, the crew will take the entire crew compartment with them. This new technique calls for literally cutting the compartment away from the aircraft's fuselage.

The compartment will be severed in front of the instrument panel bulkhead, beneath the cabin deck, and just behind the pilots' seats. A portion of fuselage and wings will be included to provide in-flight stability.

Escape sequence begins with activation by either pilot or copilot. Two actions happen simultaneously.

A linear-shaped charge, described by ASD engineers as an "exploding wire," installed along

the entire area of the escape pod, will detonate. At the same time the escape pod's rocket motor will ignite.

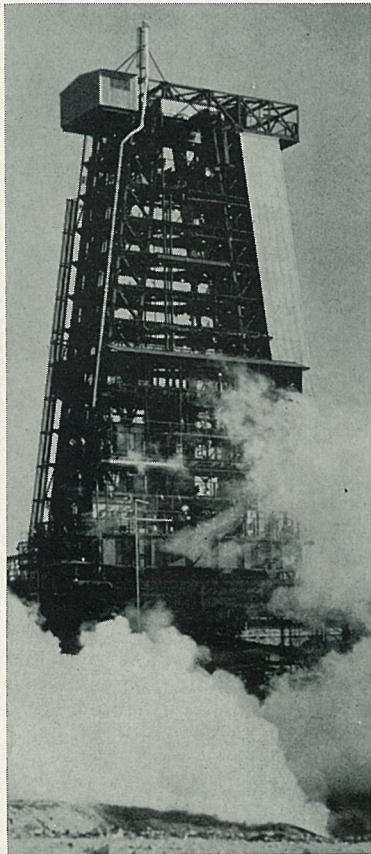
The charge will "cut through" supporting metal much like a welder's cutting torch; meanwhile the rocket motor will develop sufficient thrust to propel the crew compartment clear.

The crew will be safely separated with adequate environmental protection and all survival equipment. An emergency radio transceiver will start broadcasting automatically.

The pod's recovery system will consist of two parachutes, a small drogue chute deployed to decelerate the pod during high speed ejection and a main parachute, similar to the one now employed by the Mercury space capsule.

To lessen landing jar, a shock-absorbing material will be attached to the bottom of the pod.

The escape system will provide the F-111 crew with an emergency capability to abandon the aircraft at any altitude and speed condition, including zero altitude/zero speed, and even under water.



**HOT TIME**—Initial hot firing of improved Centaur propulsion system was completed recently by GD/Astro personnel at Edwards RS. Flight-type vehicle is encased in tower for static tests. Dual hydrogen-fueled engines produce 30,000 pounds of thrust. Clouds here are steam from ejector system.

## CANADAIR DEVELOPS BATTLEFIELD DRONE

Canadair Ltd. of Montreal is at work on development of the CL-89, an unmanned reconnaissance drone, backed by the Canadian Department of Defence Production and the British Ministry of Defence. The U. S. Army will provide firing range facilities and technical support.

F. R. Kearns, Canadair executive vice president, sales and finance, said the drone will perform reconnaissance duties in forward battle areas. It will be relatively cheap to build, compared to piloted aircraft, and will be expendable. The CL-89 began as a company venture in 1959 and is an original Canadair design.

Approximately 75 persons have been assigned to the project.

## NOTS Leases 4020 For Novel Tasks

U.S. Naval Ordnance Test Station, China Lake, Calif. has leased an S-C 4020 High Speed Computer Recorder for use with the 7090 computer, General Dynamics/Electronics-San Diego announced this week.

The recorder will be employed in data reduction, ray tracing plots for lens design and plots for antenna patterns. Among other unusual applications, it will be used in plotting gravity meter readings on the Pacific Ocean floor.

## GD/E at Rochester Wins Radio Contract

GD/Electronics at Rochester has been awarded a \$537,000 contract by the U. S. Air Force for single sideband radio communications equipment to be used at missile installations.

Under the contract, one of a series of procurement contracts for single sideband radio made by various branches of the armed forces, production will begin immediately, with completion of shipments scheduled early in 1964.

## Little Joe II Soars Aloft Successfully

A Little Joe II launch vehicle, designed and built by General Dynamics/Convair, scored a successful flight test last Wednesday over the remote White Sands (New Mexico) range.

The flight was conducted by National Aeronautics and Space Administration, assisted by Convair.

It was the first flight test operation directly applicable to the development of the Apollo spacecraft which will carry a three-man astronaut crew to and from the moon.

(NASA Little Joe tests are designed to proof spacecraft before they are sent on specific missions. Little Joe I, for instance, was used to test the Mercury spacecraft that later proved highly successful in manned orbital flights.)

The flight demonstrated the vehicle's structural integrity during the critical transonic and supersonic flight periods, Walter C. Williams, deputy director of the Manned Spacecraft Center at Houston, said shortly after the firing.

Only deviation from the flight plan was that the missile failed to heed the "thrust termination" signal, which was scheduled to precede destruction. The vehicle traveled to about 24,000 feet, reaching a top speed of Mach 1.1 (750 mph), and impacted about nine miles down range. The flight lasted about 42 seconds. Although all data had not been analyzed, it appeared that all objectives were accomplished with the exception of the thrust termination.

Seven solid-fuel rockets (one Algol and six Recruits) were used on the first launch. Ignited simultaneously, they generated 310,000 pounds of thrust to clear Little Joe II from its Convair-built launcher. In about two seconds the Recruit rockets burned out, while the Algol continued to produce thrust for about 30 seconds.

Despite its importance to the Apollo spacecraft development, Little Joe II represents a unique launch vehicle that is inherently reliable, versatile and relatively low in cost. All of its components are off-the-shelf items that have a long history of proven reliability.

The Little Joe II airframe is fabricated of low-cost corrugated aluminum alloy attached to a series of constant-diameter ring frames. There are two major sections joined by an adapter.

## Big Empennage Awes Crowd at C-141 Roll-Out

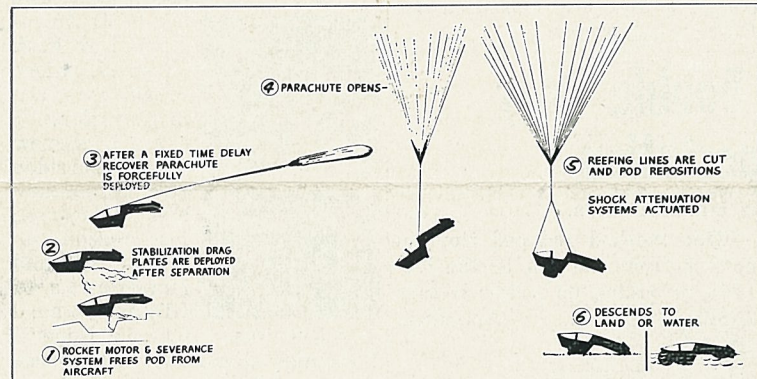
A General Dynamics/Convair-built empennage all but stole the show Aug. 22 in Marietta, Ga., during official roll-out ceremonies for the new C-141 jet transport.

In Washington, President Kennedy touched a remote control to open hangar doors. As a crowd of over 2,000 watched, the big (145 feet long, 165-foot wing span) Lockheed jet emerged with the huge T-shaped empennage towering majestically above it.

Among key GD/Convair men on hand were D. C. Wilkens, director of industrial relations; J. M. Adamson, C-141 project manager; and Don Stewart, C-141 contracts administration.

The C-141 was called an airplane that is "more mule than race horse, more truck than limousine," easy and inexpensive to maintain, always ready to fly, and characteristically reliable and economical in the air.

GD/Convair shipped its initial empennage assembly in late March, then followed with the first production version in April. Both made the coast-to-coast trek via a hydro-cushion railway car.



**SEQUENCE** — Two-man component will separate entirely from F-111 in escape system, parachuting safely to earth or water.

## Frank Davis to Speak For GD/Astro Mgt. Club

General Dynamics/Astronautics Management Club members will "Meet the Brass" at a meeting Sept. 18 in International Room, El Cortez Hotel, San Diego.

Keynote speaker is Frank W. Davis, GD/Fort Worth president, who will be joined at the head

table by GD/Astro president J. R. Dempsey and his staff, J. H. Fammee, GD/Convair president, and John L. Lombardo, general manager of GD/Electronics-San Diego.

Davis, a Dynamics veteran, served at Vultee Field, at GD/Convair, then at GD/Fort Worth as chief engineer before moving up to that division's top spot.

His talk, dealing with the TFX and B-58 Hustler, is titled "Airplanes—Texas Style."

The meeting is sponsored by GD/Astro's advanced product planning under Vice President W. H. Patterson. Tom Wills is handling general arrangements with Frank Stoklas in charge of tickets, and the raffle under direction of Palmer Osborn.

Dempsey and his staff will field questions submitted in advance by Management Club members as another portion of the program.

Pending appropriate clearance, an effort is being made to schedule a "world premiere" showing of the movie "Champion of Champions," a 28-minute film on the B-58, produced by GD/Fort Worth and narrated by Jimmy Stewart.

A sell-out crowd is anticipated, and those planning to attend have been encouraged to obtain tickets (\$3) as early as possible from Management Club "Boosters" in their areas.

Professional performers will provide dinner music and entertainment throughout the evening.



**SPEAKER** — Frank Davis, GD/Fort Worth president, pictured here in flight suit after trip in B-58, will speak in San Diego Sept. 18.



**ROLL-OUT**—At Marietta, Ga., first C-141 (empennage built by GD/Convair) was rolled out of hangar Aug. 22, amid considerable fanfare. Shown alongside plane are J. M. Adamson, Convair program manager, left, and Dick Wilkens, Convair director of industrial relations.



## Classes Start For Plant 71

Registration at first class sessions the week of Sept. 16 will be held for seven San Diego City College courses offered at Plant 71 to GD/Astronautics employees.

Pre-registration is being handled by Laura, GD/Astro educational services (Dept. 130-3), ext. 1935, who can supply additional information. All classes will meet in Bldg. 17, main plant.

Class titles, instructors, meeting days and times, and room numbers are:

Basic English for Technical Writing (23), Bill Stewart, Tuesday and Thursday, 5-8 p.m., Room 2; Mathematics (17A) (Electricity and Electronics), Tom Ruse, Monday and Wednesday, 4:30-7 p.m., Room 2; Elementary Inspection (Detail), Bob Grunner, Wednesday, 4-6 p.m., Room 8; Industrial Inspection, Grunner, Monday, 4-6 p.m., Room 8.

Electronics (45) Herm Reichert, Tuesday and Thursday, 4:30-7 p.m., Room 8; Electronics (46), Bob Boring, Monday and Wednesday, 5-7:30 p.m., Room 9, or Dennis Suchecki, Tuesday and Thursday, 2-4:30 p.m., Room 9.

## Log Book Entries Service Emblems

### MAIN PLANT

Service emblems due during the period Sept. 1 through Sept. 15.

Twenty-five-year: Dept. 143-2, J. H. Powell.

Twenty-year: Dept. 165-0, Pearl B. Craigmyle; Dept. 193-3, A. C. Campbell; Dept. 580-3, Earline B. Hearn; Dept. 596-2, M. L. Streiff; Dept. 670-0, La-Joyce C. Redman; Dept. 756-0, G. R. Shirey; Dept. 953-5, C. J. Kull; Dept. 961-0, R. P. Mitchell.

Fifteen-year: Dept. 140-3, H. L. Clower; Dept. 143-5, I. F. Smith; Dept. 250-5, Nellie F. Keller; Dept. 336-3, W. W. Sundstrom; Dept. 403-3, E. L. Parret; Dept. 673-0, G. M. Irwin; Dept. 781-0, Ila M. Tescher; Dept. 812-3, F. M. Branin.

Ten-year: Dept. 144-3, Joseph Peters Jr.; Dept. 170-1, J. R. Mackley; Dept. 191-0, Vivian L. Woll; Dept. 250-0, C. L. Hartshorn Jr.; Dept. 369-2, J. R. Pitman; Dept. 376-1, J. M. Wagner; Dept. 382, E. V. Dean, H. R. Peters; Dept. 387-1, T. K. Fisher; Dept. 401-3, C. E. Walker; Dept. 453-0, G. L. Koe; Dept. 454-0, A. D. Brooks; Dept. 462-0, H. L. Knapp.

Dept. 521-6, Betty Jean Upton; Dept. 556-5, H. E. Rogers; Dept. 577-6, D. E. Risty; Dept. 641-3, Joan M. Brennan; Dept. 662-0, J. W. Coddour; Dept. 682-2, Ronell Cox; Dept. 733-0, Neale Henderson; Dept. 756-0, Harry Anderson; Dept. 758-0, James Engleman; Dept. 759-0, S. K. Eudy; Dept. 811-3, Frances M. Robinson; Dept. 832-1, Margaret F. Smith; Dept. 835, Leonel Canales, N. A. Kirscht; Dept. 966-8, Edward Koester; Dept. 970-1, M. C. McGrath; Dept. 972-0, J. C. Perkins; Dept. 975-6, Bernice W. James.

### VANDENBERG AFB

Ten-year: Dept. 576-6, Anne S. James.

## Retirements

### AFMTC

ADAMS—A. M., Dept. 571-3. Seniority date May 21, 1959. Retired Aug. 17.

### MAIN PLANT

MITCHELL—G. E., Dept. 250-4. Seniority date July 30, 1946. Retired July 1.

## Personals

### MAIN PLANT

URGENT: Anyone witnessing accident at 6:45 a.m., April 29, between white car and red motorcycle on approach road to GD/Astro north parking area is asked to contact me at 422-0038 or Plant 71 ext. 1366.

Leo Hayds  
Dept. 401-2

### \*\*\*

We wish to thank all our GD/Astro friends for their thoughtfulness and kindness during the illness and death of our wife and mother, Dorothy E. Martin.

Ernest W. Martin, Dept. 250-3  
Richard E. Martin, Dept. 988-4

## Papers Presented

BREUER—F. D., Dept. 580-3, with RIDDELL, W. C., Dept. 598-1, "Minimum lunar orbit inclination to lunar equatorial plane for earth-launched vehicle." Astrodynamics Specialist Conference, Yale University, Aug. 19-21.

WILMOT—A. E., Dept. 598-1, with CUMMINGS, J. R., Dept. 598-1, "Launch geometry and terminal guidance techniques for orbital rendezvous." Guidance and Control Conference, MIT, Cambridge, Mass., Aug. 12-14.

## General Dynamics NEWS

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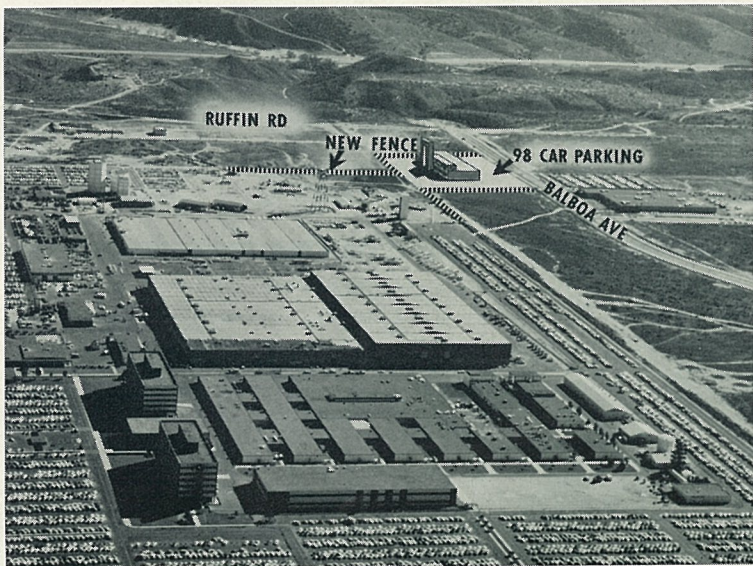
Convair Editorial Offices, Bldg. 32, Plant 1, GD/Convair, Mail Zone 1-320, P.O. Box 1950, San Diego 12, Calif. Telephone 296-6611, ext. 1071. Staff: Grayce Fath, Helen Pemberton.

GD/Electronics (San Diego) news contact: Helen Wood, 298-4641, ext. 1377, Plant 1, Bldg. 51.

Fort Worth Editorial Offices, Col. 72, Adm. Bldg., GD/Fort Worth, Mail Zone 0-50, P.O. Box 748, Fort Worth 1, Texas. Telephone PERshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

Pomona Editorial Offices, Room 106-D, Bldg. 1, GD/Pomona, Mail Zone 3-3, P.O. Box 1011, Pomona, Calif. Telephone, NAtional 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor; Carol Sowers. Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone Lone Star, Texas, 2211, ext. 424.

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FOR CENTAUR—Aerial photograph of GD/Astro Plant 71 shows site of Combined Systems Test Stand to be built by NASA for Atlas-Centaur-Surveyor flight simulation. Facility will front on Balboa Avenue near its intersection with Ruffin Road; security fence and access road will link it with main GD/Astro plant.

## Combined Systems Test Stand To Be Constructed For Centaur

Approval has been received from NASA Lewis Research Center for design of the Centaur Combined Systems Test Stand (CSTS) facility to be built adjacent to General Dynamics/Astronautics main plant.

The 3.451-acre site, purchased from the City of San Diego, is located on Balboa Avenue near its intersection with Ruffin Road.

It will be linked by an access road with the southeast corner of GD/Astro's Plant 71, from which security fences will be extended to enclose CSTS.

The facility will permit unified testing of all stages of the Atlas-Centaur-Surveyor combination to ensure that all systems are compatible and functioning together before shipment to the Cape Canaveral launch site.

NASA plans to soft-land Surveyor on the moon for exploratory operations, with development missions scheduled next year and lunar flights beginning in 1965. Atlas will serve as booster, and GD/Astro's liquid hydrogen-powered Centaur space vehicle will function as second stage.

The core of the CSTS facility will be a 100 to 115-foot two-story control building, nearly identical in equipment and interior layout to the blockhouse at Cape Canaveral's Complex 36.

On the east side of the control building will be a 30 by 100-foot high-bay wing to house Atlas in a horizontal position. At the rear, a 20 by 40-foot tower, 90 feet high, will accommodate the Centaur-Surveyor combination, mated vertically.

For tests, all three stages will be electrically mated and will function as if actually united.

The 90-foot tower and its proximity to Montgomery Field made Federal Aviation Agency approval necessary. This has been received, and facility design is now being performed by the San Diego architectural firm of Frank L. Hope and Associates.

Present plans indicate the building design and landscaping will be compatible with existing Plant 71 architecture.

GD/Astro's plant engineering department has been assigned responsibility for architectural design management, facility integration, and installation of Ground

Support Equipment (GSE). Operation of the completed CSTS is expected to be performed by Centaur project personnel.

Total cost of facility design and construction, manufacture of GSE and its installation, is estimated at approximately \$7 million.

Facility construction go-ahead is expected by early October, with the construction contract to be awarded and grading under way by mid-December. Ground will be broken for the building at that time, with a target date of May 20, 1964, for completing facilities construction.

The entire activation program is expected to be complete by October, 1964.

## Open Trolley Does Double Duty As Bleachers-Transportation

A novel "classroom" setup greeted plant engineering personnel at GD/Astronautics taking part in a special disaster control and fire prevention training program.

The two-week program drew 165 participants from maintenance operations on three shifts.

The hour-long sessions gave some idea of possible demands on them in the event of disaster, accident or fire. They were shown emergency equipment available throughout Astro and told how to operate each piece. In addition, they were familiarized with emergency procedures and the location of all first aid equipment.

Instructors from industrial security's fire department were H. B. Humbert, fire inspector, on first shift; Lt. H. C. Neel, second shift; and Lt. C. E. Miller, third shift.

The classroom was outdoors under Astro's silo mockup. Participants were picked up in their work area and transported to the site via one of Astro's open air trolleys pulled by a fire department jeep. The trolley served as seats during lectures as well

## GD/Astro Hosts Space Visitors

General Dynamics/Astronautics played host Aug. 21-23 to more than 60 top space scientists, managers and Air Force officers for a special familiarization on the Atlas Standard Launch Vehicle (SLV-3).

Those attending represented key service, governmental and industrial concerns now engaged in programs scheduled to use the SLV-3 or those who may employ it later.

Atlas SLV-3 is the nation's first standard launch vehicle, equipped with interchangeable instrumentation and circuitry for use in a variety of space missions for the Air Force and NASA. It represents one of three versions of Atlas currently in production or under development for space missions.

Thirteen government programs are scheduled to use the Atlas as a launch vehicle.

They include Project Ranger to land instrumented probes on the moon; Project Mariner to probe Venus and Mars with scientific satellites; Project Fire to test vehicles and systems during atmospheric re-entry; EGO (for Eccentric Orbiting Geophysical Observatory) to place general-purpose satellites into high altitude orbits; OAO (for Orbiting Astronomical Observatory) to place unmanned scientific observatories into 500-mile-high circular orbits; Project Gemini in which Agena target vehicles will be launched for development of space rendezvous and docking techniques; Project Centaur, the launching of a liquid-hydrogen-powered second stage for Surveyor and other exploratory programs; and several classified Air Force space projects.

## Cheung Named To Atlas Post

L. T. Cheung, General Dynamics veteran, has been named manager of program control - Atlas weapon systems, by W. L. Van Horn, GD/Astronautics vice president and program director.



L. T. Cheung  
F. Miller.

A native of Canton, China, and a graduate of Purdue University, Cheung joined GD/Convair in 1943. He held various engineering positions until 1946 at which time he returned to the Orient to head his own engineering and consulting firm in Hong Kong.

Returning to the U. S. in 1953, he rejoined GD/Convair two years later, and in 1956 shifted to GD/Astro's Atlas project as a senior structures engineer, assistant project engineer, and later project engineer.

He has held the Nike-Zeus post since late last year.

## Corridon Appointed To Inter-Division Work Assignment

Appointment of Frank J. Corridon as manager of inter-division work assignment planning, reporting to C. W. Blakey, director of contracts, has been announced



F. J. Corridon

at GD/Astronautics by F. J. Traversi, vice president - administration.

In his new post, Corridon will accumulate and coordinate information on capabilities and interests of GD/Astro and other General Dynamics divisions, and assure that the division realizes maximum participation in programs in other areas of the Corporation.

A native of Buffalo, N. Y., Corridon brought with him experience gained at Curtiss, Bell, Martin and Ryan aircraft companies when he joined GD/Convair's contracts department in 1947. From 1950 to 1951, he served as contract administration supervisor at GD/Fort Worth.

In 1956, he rejoined GD/Convair as buying supervisor, and transferred to GD/Astro in 1958 in a base activation assignment.

His background includes study at University of Buffalo, N.Y., Cornell University, Georgia Tech, and University of California, Los Angeles.

## Rates Offered At Circle Arts

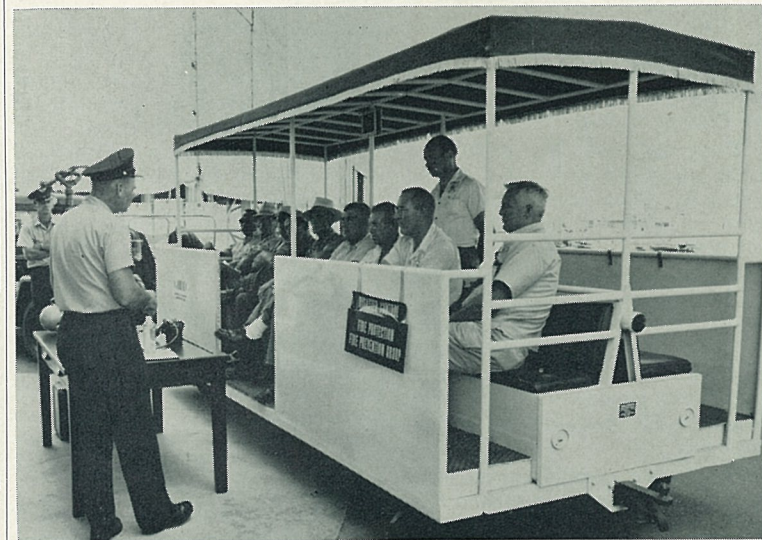
Tickets to three major entertainment events are now being offered GD/Astro employees at discount rates.

Available are seats for both matinee and evening performances of "Annie Get Your Gun" starring Janet Blair, Sept. 8 at Circle Arts Theatre. A 30 per cent reduction is offered on afternoon prices, with evening tickets marked down 20 per cent.

Launching Circle Arts' winter season is Danish comedian and pianist, Victor Borge. GD/Astro employees may purchase tickets for his Sept. 22 show at 20 per cent off usual rates of \$5.50, \$4.50 or \$3.50.

Another 20 per cent discount is offered on tickets for the much-publicized movie, "Cleopatra" on Sept. 29 at Capri Theatre.

All tickets are sold at employee services, Bldg. 8, during regular sales hours.



NOVEL IDEA—Some 165 maintenance employees at Astronautics recently took part in special classes in disaster control and fire prevention. Groups rode to outdoor classrooms and listened to lectures aboard open-air trolley. Fire truck pulls conveyance to cut down on travel time, increase lecture time.



## 16 to Instruct For Calif. U.

Men from three General Dynamics divisions in San Diego will be on the University of California Extension faculty as the fall term opens the week of Sept. 23.

Of the sixteen GD instructors, eight are from GD/Astronautics; six, General Atomic; and two, GD/Convair.

GD/Astro men and courses they will teach are: Raymond A. Elliott, design specialist, "Introduction to Electronic Digital Computing Systems"; James A. Haskins, staff scientist, "Advanced Engineering Mathematics"; John E. Leib, senior electronics group engineer, "Computer Applications—Ordinary Differential Equations"; W. Duane Montgomery, staff scientist, "Introduction to Complex Analysis"; Cyril H. Nute, design specialist, "Advanced Engineering Mathematics"; and "Statistical Theory of Communication"; Douglas L. Platt, space and weapon system program analyst, "Fundamentals of PERT Planning and Control" and "Advanced PERT"; Theodore Rubin, design specialist, "Probability and Statistics"; Ernest Wade, senior design group engineer, "Introduction to Control Systems Theory."

General Atomic instructors: James H. Alexander, research and development staff member, "Linear Algebra"; John K. Dienes, research and development, "Introduction to Mechanical Vibrations"; Eugene Haddad, research and development, "Nuclear Physics"; Carlo Riparbelli, research and development, "Applied Elasticity"; Marius Troost, research and development, "Logic of Applications of Automatic Digital Computers"; Fred A. Wolf, theoretical physicist, "Magnetohydrodynamics."

GD/Convair faculty members are: J. D. Meacham, publications editor, "Programmed Instruction in Business"; and Bruno F. W. Witte, design specialist, "Numerical Mathematical Analysis."

## 'VULTEE' CLUB AGAIN WILL HOLD REUNION

General Dynamics employees eligible for membership in the "Vultee Club" have been invited to attend the 16th annual reunion Sept. 28 at Disneyland Hotel, Anaheim.

The "Vultee Club" is composed of former employees of the Vultee Aircraft Co. which later became a division of Consolidated Vultee Aircraft Corp. Currently, there are 800 active members who pay no dues or fees, but merely get together once each year.

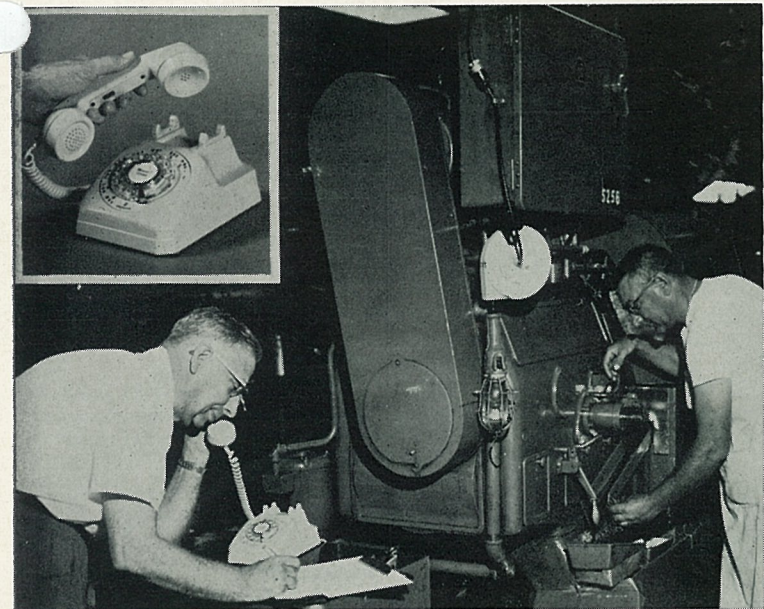
Dinner reservations are \$5. Those eligible and not on the regular mailing list may write to: Vultee Club, 11010 So. Garfield Pl., South Gate, Calif.

San Diego members are considering chartering a bus to make the round trip, if interest warrants. Wes Magnuson (Astronautics) will supply details to those calling ext. 1925 at GD/Convair's Plant 1.

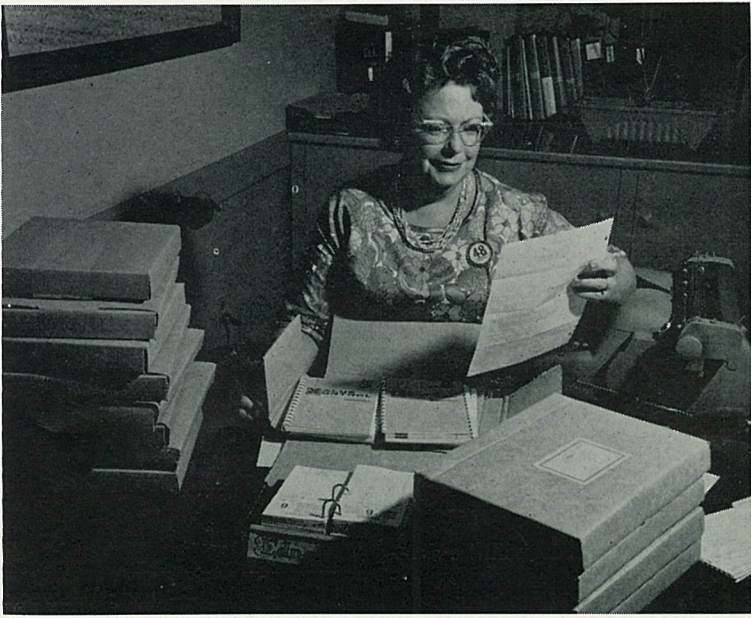
## New Stromberg-Carlson Phone Lets Listener Adjust Volume

A telephone handset with built-in volume control has been introduced by Stromberg-Carlson — division of General Dynamics at Rochester as an addition to its line of communication products. It will provide improved telephone service for the hard-of-hearing and for persons whose phones are located in noisy areas.

The new HRA-1000 receiver-amplifier places complete volume control at the fingertip of the subscriber, making it possible for him to vary the incoming voice volume simply by turning a knob



**CONTROL** — Al Parina, foreman of Stromberg-Carlson's screw machine department, demonstrates use of new HRA-1000 receiver amplifier (insert) before he retired in August. At right operating machine is Joseph Guarino.



**MAIL ORDER DEPT.** — Edna Hovey (GD/Convair Dept. 48) checks over order for GD/Convair value control programmed instruction books as she packages sets for shipment. Edna doubles as secretary for W. J. Martin, director of reliability, and H. P. Williams, manager of value control.

### Value Control

## Word Gets Around, GD/Convair 'Trainers' Sell Like Hot Cakes

It pays to advertise—but some things are so good they sell without advertising, as shown by advance sales of General Dynamics/Convair's programmed instruction for value control.

To date over 400 sets of the training books have been bought and paid for by various branches of the military and industrial companies, well before any kind of a promotional campaign, said H. P. Williams, GD/Convair manager of value control.

"We actually didn't expect sales to get under way until this fall when most companies begin their training programs," he explained. "So we have been really amazed at the numerous requests and hundreds of inquiries that have poured in, before the word has had a chance to circulate to any extent at all."

"We expect interest to snowball as training is stepped up and present users prove the worth of the new method of teaching value analysis. It will be particularly pertinent for defense industries seeking the most efficient means of complying with value engineer-

ing requirements of the Department of Defense's Armed Services Procurement Regulations."

Since the first order was received in late February, sets have been in demand by every type of industry, from aerospace to sewing machine manufacturers. One set has gone to a British firm, another to a company in the Far East, and three to Canadian businesses. So far, the largest order was for 50 sets, although several inquiries have been received which may lead to orders of 100 to 500.

At least six companies already have set up their own training programs based on the GD/Convair step-by-step method of instruction, and one university is using the series.

Sampling of comments fed back to GD/Convair shows nothing but praise: "The texts are nicely arranged and extremely understandable. Much of the material will be usable in our planning for our training program" . . . "Congratulations on an excellent piece of work" . . . "Compliments on a novel and systematic approach to the training task" . . . "Teams require less direction and guidance from project leaders."

The value control programmed instruction, compiled through cooperative efforts of GD/Convair technical publications, educational service, and value control functions, cuts seminar time by at least one-fourth, points out Williams.

He went on to say that the programmed instruction form of training has shortened the standard 40-hour seminars in the division's continuing program by 10 hours.

"Ten hours, multiplied by 30 or 40 men, saves the division hundreds of manhours every month!" he said. "And, we've proved that the simplified instruction gives each person a thorough understanding of value control techniques and their importance."

Some 600 GD/Convair men have gone through value control training in 17 full-length seminars since value vs. cost training was started in the division a couple of years ago. Over 200 administrators on the executive level have received indoctrination in capsule courses.

Besides the regular seminar program which will resume within a few weeks on a monthly basis, plans are in the making for several special seminars for outside companies in the San Diego area.

Small industries in the nearby vicinity will be surveyed to find out how many would like to send their people to full-length seminars offered by GD/Convair. Each company's own projects would be used in the workshop section.

In addition, a symposium is in the offing for military services and suppliers. At this time a complete review will be made of the latest ASPR value engineering requirements.

### Role of Decision

## GD/Astro Scientist Faces Task Of Integrating Man, Machines

Lawrence J. Fogel might be dubbed a "scientist-engineer" by reference to definitions in his book published earlier this year by Prentice-Hall.

In "Biotechnology: Concepts and Applications," Fogel—a senior staff scientist at General Dynamics/Astronautics—comments that the scientist "does to know," while the engineer "knows to do."

The 800-page volume (written on his own time over a three-year period), deals with the problems of integrating man and machines to meet the challenges of present and future tasks.

To gain the necessary information, Fogel has drawn upon the classical disciplines of psychology, biology and mathematics to examine problems associated with design of pressure suits, cockpit displays and other equipment used directly by man.

"It is man's decision-making capability which justifies his inclusion in complex systems," he notes, taking a broader view. "Therefore, modern computers should be used wherever possible to enhance this key human ability."

At 35, Fogel holds engineering degrees from New York University (BSEE, 1948) and Rutgers University (MS, 1952).

He has also completed all course requirements for a doctorate in electrical engineering at Polytechnic Institute of Brooklyn, and in biotechnology at University of California, Los Angeles. Preparation of a thesis should complete the degree requirements in the near future.

At GD/Astro, the "author-scholar-scientist-engineer" is presently conducting a research program in the area of artificial intelligence: the use of machines to

solve problems which have not yet been solved by man.

"The often quoted belief that computers do nothing but what you tell them to do is a dangerous over-simplification," Fogel commented.

Using GD/Astro's IBM 7090 system, he is attempting, in particular, to allow the computer to carry out a fast-time replication of natural evolution so that the machine itself will evolve better and better programs to meet the imposed "problem."

Fogel feels a definite urgency in his work.

"The dangers which might result from the misuse of technology are great," he said. "So great, in fact, that we must use this technology to increase our intellectual capacity if we are to hope for a safe and worthwhile future."

While unique, Fogel's research and the varied background from which he approaches it are typical of research and researchers in the full spectrum of science, to be found at General Dynamics divisions across the continent.

Fogel joined the Dynamics family at GD/Convair in 1956 as a design specialist, and later headed a reliability group before taking a year's leave to serve as special assistant to the associate director (research), National Science Foundation, in 1960.

Returning to the West Coast in 1961, he joined GD/Astro where he reports to Dr. H. F. Dunholter, director of research and advanced technology.

In addition to his recent book on biotechnology (which is designed as a college text and reference work), he is author of more than 30 scientific and technical papers.



**EPIC OCCASION**—Delivery of publisher's leather-bound office copy of his book is moment dear to heart of every author. Beaming Lawrence Fogel, GD/Astro senior staff scientist, right, is no exception as he accepts volume from Prentice-Hall representative John Crane, left.

## San Diego Junior College Courses To Be Offered In-Plant This Fall

In-plant training courses offered by GD/Convair educational services in cooperation with San Diego Junior Colleges have been announced for the fall semester.

Classes will be taught following regular work hours (most 4:30 to 7:30 p.m.) at Bldg. 14, Plant 1, with the majority taught by qualified General Dynamics instructors. Classes begin the third week of September and run through late January. Some courses require prior attendance in other courses. Wayne Turner, ext. 491, will answer specific questions.

Basic cost per semester is \$1.50 and students must buy their own text books.

Here is a complete rundown on scheduled courses with the class date in parenthesis, plus the name of the instructor:

Basic Hydraulics (Wednesday), Walter Gill; Basic Technical Writing (Tuesday), Louie Hen-

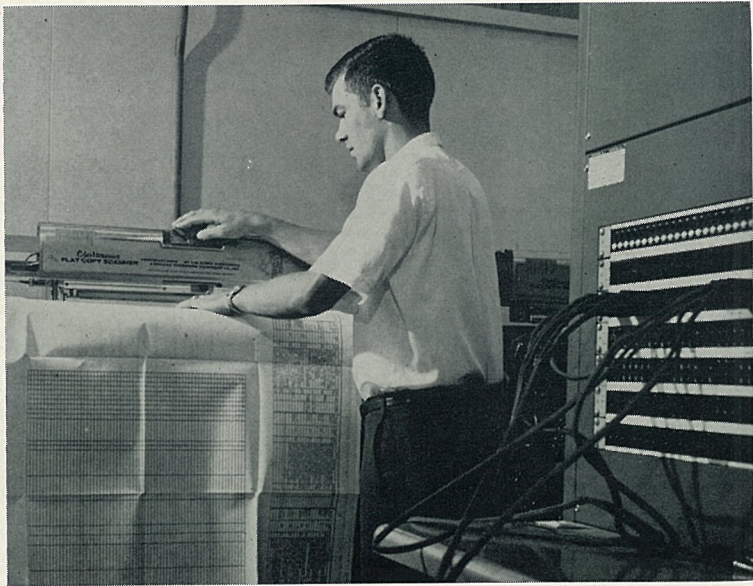
derson; Technical Writing II (Wednesday), Henderson; Technical Writing III (Thursday), Henderson; English for Technical Writers (Monday), Bill Stewart; Technical Writing 7 (Thursday), L. C. Litchfield; Basic Electricity (Monday), Ken Theilig; Basic Electronics (Monday and Wednesday), E. B. Milner; and Electronics Components and Theory (Tuesday and Thursday), Harold Ayer.

### Electro Dynamic 'Buspool' Formed

A group of employees at Electro Dynamic division, Avenel, N. J., have solved transportation problems with a "buspool."

They have chartered a bus for a daily run from Bayonne. One big advantage is that there is no doubt about whose turn it is to drive.





**DATA FAX**—GD/Astro expects to save \$355,000 during updating of series "F" Atlas bases through recently-implemented communications control system. Among key savings will be those realized in rapid data transmission facsimile equipment such as this operated by Mike Dicklich of technical publications.

## New Communication System Will Speed GD/Astro Updating

General Dynamics/Astronautics is implementing a new communications control system to serve teams updating series "F" Atlas bases (**General Dynamics NEWS**, July 10, 1963).

Basic steps have been taken with others to follow as requirements dictate.

Through the system, Astronautics will realize savings in excess of \$25,000 monthly or more than \$355,000 for the entire program!

Astro personnel have worked closely with representatives of both American and Pacific Telephone and Telegraph Companies in mapping out details. The system affords maximum use of voice, wire and facsimile transmission at the lowest possible cost. At the same time Astro will be able to exercise complete control over the entire communications network and its resulting costs through the office services section of division systems department.

Six series "F" bases are widely scattered and each is served by a separate telephone company. In past activation and updating work these companies presented bills to each base which, in turn, forwarded them to Plant 71 accounting. Accounting, however, had to route the bills through office services for verification. The results were many handlings per bill.

Now all companies will submit bills directly to Pacific Telephone in San Diego. Astro will receive a single monthly bill, sent directly to office services for verification, then to accounting for payment.

Astro will also utilize a Bell System service, called TELPAK, which offers a group of lines on a point-to-point basis at greatly reduced rates. Next month the service links Astro with Altus AFB, Okla., through Walker AFB, N.M. From this terminal, voice and Data Fax lines will stretch to Dyess AFB, Texas, Lincoln AFB, Neb., and Plattsburgh AFB, N. Y.

Astro will also have available through TELPAK direct or "hot lines" for voice communications at all but Plattsburgh AFB. The latter will be included in General Dynamics' Wide Area Telephone Service which provides unlimited calling to a specific area on a flat-fee basis.

Largest saving in the entire system will be realized through a new Data Fax service. This service will afford a two-way transmission of facsimile material over a single circuit in lieu of two one-way circuits formerly used.

This unusual service allows sending and receiving of facsimile material such as drawings, blueprints, diagrams, etc.

During peak periods of former base activation work as many as 400 pages of material per day were transmitted on two eight-hour shifts. Special scanners "read" material at a rate of 1½ inches per minute, transmitting

this material simultaneously to the bases. Up to 18-inch-wide material of any length may be handled.

Data Fax equipment utilized by Astro is located in Bldg. 51 at GD/Convair where Astro's technical publications function is centered. It includes an operating or switching console to route outgoing and incoming facsimile material. Any number of points may be cut into the system to send or receive at the same time.

## Pt. Loma Operations Now Under Rother

All operations at GD/Astronautics' Point Loma Test Site have been concentrated under Carl Rother, engineering site manager, Dept. 566-1, in a move announced earlier this month by President J. R. Dempsey.

This centralized responsibility is expected to result in more effective management, with increased efficiency, reduced costs, and improved test operations.

Rother is now responsible for all activities at Point Loma. All employees assigned there, regardless of department, are under his direction, although personnel continue to report to their home departments for administrative purposes.

## ARA Ballroom Dancing To Organize Sept. 16

Scope of ARA's fall ballroom dancing program will be determined at an open organizational meeting to be held at 7:30 p.m., Sept. 16 in ARA Clubhouse, Commissioner Ludy Moeller has announced.

The program will consist of 12 one and one-half hour lessons for a total cost of \$9 per person.

Moeller said more than one class may be possible if interest warrants. Class operation requires a minimum of 17 couples.

## Knutson Wins Two Pistol Competitions

J. S. Knutson doubled by taking both Police and National events in ARA Pistol Club's Aug. 25 shoot.

Knutson bettered Harry Black in master class, while Bill Dittman beat Warren Rauscht and Byron Clapper topped Bill Worthington in expert and sharpshooter classes respectively.

Rauscht trailed Knutson in the national event.

## NAVY BENEFIT EARNS PRAISE

Nellie Keller, GD/Astro overhead crane operator, was recently lauded by leaders of a North Island Benefit Carnival for her help in promoting the event. Nellie helped sell 100 books of donation receipts among fellow employees.

## Gardeners to Hear Dahlia Developer

ARA-CRA gardeners will gather tonight (Sept. 4) at 7:30 p.m. in ARA Clubhouse (adjacent to GD/Astro main plant) to focus attention on dahlias. All GD/Astro, GD/Convair and GD/E folk are welcome.

Guest speaker will be Paul Comstock of Comstock Dahlia Gardens, who, over a quarter-century in business, has introduced at least one new dahlia variety each year.

He will show slides and movies reviewing dahlia development during the past decade, and will bring sample blossoms of varieties he has introduced.

Of special interest will be samples of dahlias placed on the market for the first time this year, and previews of varieties to be released in 1964.

## \$10 Deposit Will Hold Vegas Reservations

Space is still available for GD/Astro employees wishing to participate in ARA's Las Vegas trip Sept. 20-22. A \$10 deposit will hold reservations at employee services, Bldg. 8.

Deadline for sign-ups is Sept. 13, at which time balance of the \$25 per person cost must be paid.

The package deal offers double-room accommodations at the new Tally-Ho Hotel in the heart of Las Vegas' "strip" and round trip transportation via chartered bus. Single rooms are available for an additional \$2 per night.

## Few Openings Left For Riding Lessons

Some openings remain in beginning, intermediate and advanced horseback riding classes to be sponsored by ARA Riding Club beginning Sept. 8.

Employees or members of their families may register for the 8-week series by completing applications available at employee services outlets.

Lessons will be given from 11 a.m. to noon Sundays at Bonita Valley Farms. Cost is \$15.

## ARA Riders to Host Show in Club Arena

ARA Riding Club plays host to the Mission Trails Riding Club at a horse show set for the ARA arena Sunday, Sept. 8.

Junior riders will gather at 2:30 p.m., Saturday, Sept. 7, and the next regular ARA Riding Club meeting will be held at 7:30 p.m., Sept. 10, both at ARA Clubhouse.

## ARA Drama Group Names New Officers

Annabel Audet heads new officers recently assuming posts with Astro Players, ARA drama club, while John Cone has moved into the vice president's slot.

New committee chairmen are Pauline Middleton and Pat Givens, who have accepted responsibility for membership and promotion, respectively.

The group meets the second Wednesday of each month in ARA Clubhouse, and is presently conducting an intensive campaign for new members. All GD/Astro employees and dependents have been invited to join the club.

## Claire Ward Earns 'Miss College Prep'

Claire Ward, 18, daughter of GD/Astro's Lorraine Ward, Dept. 313, is this year's representative of Kearny High School graduating class as candidate for the "Miss College Prep" title.

## WIVES TO LUNCH IN MISSION VALLEY

Astro Wives' Club will hold its monthly luncheon meeting Sept. 18 at Mission Valley's Town and Country Hotel, with social hour beginning at 11:30 a.m. and luncheon at 12:30. Reservations are being accepted by Helen Johnston, 277-2308.



**AT BIG BEAR**—Rustic Wawona Lodge, headquarters for General Dynamics folk participating in joint ARA-CRA Ice Skating Club-sponsored weekend at Big Bear Lake, Sept. 20-22, has all modern conveniences including pool. Accommodations include rooms for two to five persons, housekeeping cabins for families.

## Weekend Outing to Big Bear Lake In Prospect For Dynamics Folk

General Dynamics folk—Convair, Astro or GD/E—have been invited to join in a weekend outing at Big Bear Lake, Sept. 20, 21, 22, sponsored by the joint ARA-CRA Ice Skating Club.

For \$12 per person, participants get a package of two nights' lodging and all meals. Children under 8 years participate for only \$6.

Site of the outing is Big Bear's Wawona Lodge, long-time favorite of General Dynamics weekenders. Accommodations include hotel rooms with private bath for two, three, four or five persons, and housekeeping cabins for family groups.

Activities feature swimming in the lodge pool, hiking, horseback riding, cycling, ice skating, and an informal dance (with midnight pizza snack) Saturday evening. Meals are under direction of Gil Hutter, Prophet Co. manager at GD/Astro.

Reservations (limited to 100

## Ground School Course Slated

There are still openings in the proposed CRA's Solo Flyers ground school course scheduled to begin this month. All General Dynamics would-be pilots in the San Diego area are eligible to enroll.

"Considerable interest has been shown and an instructor has been engaged, but we need a few more registrations before a definite starting date can be announced," Harold Ayer, Solo Club president said.

The course will cover such subjects as physical requirements, student permits, pre-flight checks, traffic patterns, theory of flight, navigation and meteorology, all of which are necessary before a student can earn his wings.

Flying lessons at special rates are offered to members of Solo Flyers through Jim's Air Service, Lindbergh Field.

Additional information concerning the class may be obtained from Ayer at ext. 2678, Convair Plant 1.

## Holidays Set For Year-End

Forthcoming holidays for General Dynamics employees in California—based divisions have been announced so that families may have ample time to plan their activities.

Thanksgiving Day, Nov. 28, will be a regular holiday.

The year-end holidays will be divided between three days off at Christmas and one on New Year's Day. Monday, Dec. 23, Tuesday, Dec. 24, and Wednesday, Dec. 25, will be holidays. So will Wednesday, Jan. 1.

Employees in departments performing necessary maintenance and industrial security work during holiday periods will be notified individually.

persons) may be made at employee services at Plant 1, 71, 19, with full price payable at time of sign-up. Individual transportation arrangements must be made.

Barbara Gilliland, Astro Blades president, GD/Astro ext. 4041, can supply additional information.

## Jack Rogers Wins Honors In Trapshoot

The heat was sizzling but so was Jack Rogers, GD/Convair, as he walked away with top honors in three events in the ATA registered trapshoot Sunday, Aug. 18 at CRA-ARA's Gun Club range at Gillespie Field.

The event drew a field of 91 enthusiastic shooters from the Southern California area, making it one of the largest and most successful meets of the season, CRA Commissioner Jack Swank reports.

Standings for the event were: Class A and B combined: Rogers with 98 out of a possible 100; Bill Shrode, second with 97; and Howard Jacklin, GD/E, and Tom Hodgson tied for third with 96. Class C and D combined: L. P. Johnson, first, 96; John Beamer, GD/Astro, 94; Joe Ellis, 93. Handicap: Rogers, 97; Bill Miller, 95; Jacklin, 94. Combined 16-yards and Handicap: Rogers, 195 out of a possible 200, followed closely by Warner Gatterman, GD/Astro, with 190. Gatterman with a score of 90 also placed first in the Doubles event.

Lois Smith emerged with honors as high lady of the day with an 87, while Jeff Johnson at 86 was high junior.

Shooting sweaters went to first-place winners, and gloves or glasses were awarded to runners-up.

## Extension Offers Programming Class

A course in "Programmed Instruction in Business" is being offered General Dynamics people in the San Diego area by University of California Extension. First class will be held Sept. 26 at Roosevelt Jr. High School, continuing each Thursday from 7 to 10 p.m. J. D. Meacham, GD/Convair, will instruct.

Registrations are now being accepted at Extension headquarters, 1221 Fourth Ave. Meacham is available at Convair ext. 2249 to answer inquiries concerning the class.

## September Salvage Schedule Set Forth

Schedule for the next four Saturdays at GD/Convair and GD/Astro salvage yards is:

GD/Astro—Sept. 7, 21.

GD/Convair—Sept. 14, 28.



# Sports & Recreation

## Final Call For Action Sounded For Bowlers

Final call to action sounded throughout Astronautics this week as plans were formulated to open play in ARA-sponsored winter bowling leagues.

Team captains are due to meet next week to organize leagues and elect officers. League members will turn out the following weeks as bowling settles down to its regular winter stand.

Entry blanks are still available at all employee services outlets and most leagues have openings for either teams or individuals. However, more popular leagues are filling fast on a first-come, first-served basis. Entry forms contain a complete listing of all planned leagues for the winter season.

In addition, ARA has contacted all bowling establishments in the area as to available time for possible leagues. This information is also contained in entry forms. Leagues will be formed when a minimum of six teams are signed.

Leagues will roll Tuesday, Wednesday, Thursday and Friday at Clairemont; Tuesday and Wednesday at La Mesa Bowl; Tuesday at Parkway; Wednesday at Frontier, Poway and Mission Valley Bowlero; with a junior program for boys and girls 8 through 18 years on Saturday (10:30 a.m. at Clairemont); and a program for wives on Tuesday (9:30 at Clairemont).

For swing shifters one league

## Discount Passes For Bay Races Offered

Three-day passes for National Inboard Championship speedboat races on Mission Bay, Sept. 20, 21, 22 are being offered to GD/Astro employees at a discount.

For \$4, employees may purchase regular \$5 passes, good for admission on all three days, a reserved-area grandstand seat, preferred free parking and admission to the "pit" area. Children are admitted free to the grandstand area when accompanied by an adult with pass.

Sale is conducted at employee services office, Bldg., 8, from 11 a.m. to 1 p.m., and 4-5:30 p.m. daily.

## Professionals Engaged For Sept. 14 Hootenanny

There's gonna be a Hootenanny! Yielding to the tide of folk-music popularity, ARA will hold an "honest to goodness" Hootenanny, Sept. 14, 8 to 11 p.m., in ARA Clubhouse.

Admission for the event, billed as an adult attraction, is 50 cents per person, with 200 tickets on sale today first-come, first-served, at employee services outlets.

C. D. Hollis, Dept. 954-2, has arranged a full evening of entertainment featuring professional performers.

Top billing goes to the "Circuit Riders," who have performed at Disneyland, on several West Coast television shows, and are now playing a return engagement at Pasadena's "Ice House."

A vocal duo, Ron Crosby and Chloe, has appeared at several folk festivals and small night clubs throughout Southern California.

Tying the acts together will be Bill Willoughby, comic and master of ceremonies, recently arrived from New York's "42 Club" where he was director of entertainment.

In keeping with the folk music theme, several "sing-alongs" have been programmed, and refreshments — beer, soft drinks, coffee, etc. — will be available at modest prices.

is set to roll following work on Fridays at Clairemont. In addition, another group is seeking members to roll on another night (other than Friday) at Frontier. Second shift employees desiring to enter this proposed loop may fill in a regular entry form, but specify they wish to roll at Frontier with the swing shift loop. Further information will be provided individually.

## Bridge Lesson Series Planned

A new series of advanced lessons will be offered by ARA Bridge Club beginning at 7:30 p.m., Sept. 5 in ARA Clubhouse, and continuing for eight consecutive weeks.

This is in addition to beginners' instruction offered regularly on Friday evenings, as well as regular Friday tournament play.

Total cost of advanced instruction is \$2.50, with classes to be directed by a local bridge expert. Registration in advance with ARA Commissioner Art Saastad, ext. 3012, is preferred, although students may sign-up at the first class meeting.

In tourney play Aug. 16, winners were Mr. and Mrs. W. P. Hatherley (NS) and Mr. and Mrs. Robert Rustad (EW). On Aug. 23, two sections were formed with Section A winners Mr. and Mrs. C. A. Miller (NS) and Robert Rustad and Norma Tuttle (EW).

In Section B, winners were Lucille Donan and Elma Buchanan (NS) and Maurice Schiff and George Enzmann (EW).

## Astro Notes Seeking Additional Voices

Astro Notes, ARA choral group, is conducting an active membership campaign to boost its ranks for the coming concert season.

All employees or members of their families are invited to join the group by attending regular practice sessions on Mondays, 7:30 p.m., ARA Clubhouse, or by contacting ARA Commissioner Al Phillips at 277-2189.



**SWELLING RANKS**—Fifty new square dancers became full-fledged Astro Naughts when they completed 22 weeks of instruction with ARA group. A graduation party in ARA Clubhouse Aug. 20 marked occasion.

## ARA Calendar

GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**ASTRO LENS** — Meets 7:30 p.m., Sept. 15, Photo Arts Bldg., Balboa Park. Lecture.

**BALLROOM DANCING** — Organizational meeting, 7:30 p.m., Sept. 16, ARA Clubhouse.

**BOWLING** — Applications for ARA winter leagues available at employee services outlets.

**BRIDGE** — Advanced lessons start 7:30 p.m., Sept. 5, ARA Clubhouse. Total series cost (8 weeks) is \$2.50. Register with Art Saastad, ext. 3012.

**DISCOUNT TICKETS** — Circle Arts presents Victor Borge, Sept. 22, 8:30 p.m. Also, "Cleopatra," Sept. 29, Capri Theater. Both at 20% discount. Tickets at employee services.

**DRAMA** — Meets 7:30 p.m., Sept. 11, ARA Clubhouse.

**FISHING** — Meeting today (Sept. 4), 7:30 p.m., ARA Clubhouse.

**GARDEN** — Joint ARA-CRA club meets at 7:30 p.m. today (Sept. 4) in ARA Clubhouse.

**HO RAILFANS** — Organizational meeting, 7:30 p.m., Sept. 6, ARA Clubhouse. Information, Dave Fyffe, ext. 3189.

**ICE SKATING** — Indian Summer Weekend at Big Bear, Sept. 20-22. \$12 per person includes lodging, meals. Provide own transportation. Reservations at employee services offices.

**LAS VEGAS TRIP** — Bus trip plus two nights at Tally-Ho Hotel, \$25 per person. Reservations at employee services, Bldg. 8, through Sept. 13.

**RADIO** — Business meeting, 7:30 p.m., Sept. 11, ARA Clubhouse.

**RIDING** — Lessons start Sept. 8, 11 a.m. to noon, Bonita Valley Farms. \$15 for 8-week series. Applications at employee services outlets.

**SAILING** — Meeting Sept. 9, 7:30 p.m., ARA Clubhouse.

**SQUARE DANCING** — Beginners class open Sept. 10, 17, 24 at 8 p.m., ARA Clubhouse. Series of 22-24 lessons. Cost is 50 cents per night.

**TOASTMISTRESS** — Serra Mesa Club meets at 7:30 p.m., Sept. 9, ARA Clubhouse. Wives, women employees welcome.

**WIVES' CLUB** — Luncheon meeting at Town and Country, Mission Valley, Sept. 18. Reservations with Helen Johnston, 277-2308.

## New Model Railroad Group Will Convene

First formal meeting of ARA's newly-formed Model Railroad Club (HO-scale) will be held at 7:30 p.m., Friday (Sept. 6) in meeting room "B," ARA Clubhouse.

ARA Commissioner Dave Fyffe said the session would concentrate on general organization, and planning for utilization of a 20 by 80-foot layout space.

Additional information is available from Fyffe, ext. 3189 Plant 71.

## It's One of Those Rare Times When Sq. Dance Roster Is Open

Twice each year, Astro Naughts, ARA square dance club, opens its doors to beginners wishing to learn the skill "from the ground up."

One of those times is now at hand, with Commissioner Marty Stutz announcing formation of a new class starting at 8 p.m., Sept. 10 in ARA Clubhouse.

(Beginners will also be accepted at sessions Sept. 17 and 24. Then entries will close until a new class resumes next February.)

Sessions are designed for those who have never before square danced.

Veteran instructors Dot and Van Vanderwalker take novices from the basic steps through routines of intermediate complexity in the course of the 22 to 24-week lesson series. Those who complete the program are eligible for membership in the advanced Astro Naughts group.

Dancers will gather each Tues-

day from 8 to 10 p.m., at a cost of 50 cents per person per session. At first, instruction is backed by recorded music; later the group holds party nights with live music and guest callers.

## Mendoza-Scott Team For 76

Ray Mendoza and Dan Scott made up the winning team in ARA Golf Club's recent Scotch Twosome tournament at Bonita, scoring a low gross 76 in the 0-18 handicap flight.

Gross 78 from Kay Stites-Dick Tobias was second, and 79 by H. H. Moran-H. M. Smith, third.

Low net honors in this bracket went to Bill Kurch-P. Swanson with 63; H. Wilson-Hank Gallant scored 64.5; and Earl Kranz-E. Castillo, 65.

In the second flight (18.5 plus handicap), the team of J. Clabaugh-F. J. Patton had low gross 84. Two teams, Cris Shinkle-R. B. Reid and H. D. Walling-D. A. Scott, scored a second place 85, with third-place honors also shared between teams of Jim Miller-Bud Fischer, M. McEachern-L. Fuller, 87.

G. E. Anderson-J. Marshall shot a low net 62 in this class; Hal Heist-S. Seiler, 63; and J. R. Trinko-Vern McMillan, 63.5.

## Astro Son Winner Of Five Awards In National Meet

Bob Beecroft, son of GD/Astro's Kent Beecroft, was the only General Dynamics contestant to get into the winners' circle at recent National Model Airplane Championships July 29 through Aug. 4 at Los Alamitos Naval Air Station.

In one of the fiercest competitions local modelers had ever experienced Bob came home with a first in senior (16-20 yr.) indoor hand-launched glider class; first in senior Nordic A-1 towline glider, in which he set a new senior national record; second in the rise off water free flight gas event; third in senior Wakefield rubber; and fourth in Class C senior free flight gas. He brought back four trophies and one plaque for performance of his models.

## Discount Offered For Bowl Tickets

Discount tickets for Starlight's production of "Unsinkable Molly Brown" are available to GD/Astro employees through employee service, Bldg. 8.

Full 25 per cent mark-downs are offered on regular \$4 and \$3.50 seats at the Sept. 14 performance.

Included in the cast of the Meredith Willson hit are three GD/Astro employees. Les Cozzens will be seen in the part of Prince DeLong, John Murphy as Molly's father, Shamus, and Larry Peterson as the kindly priest, Father Flynn.

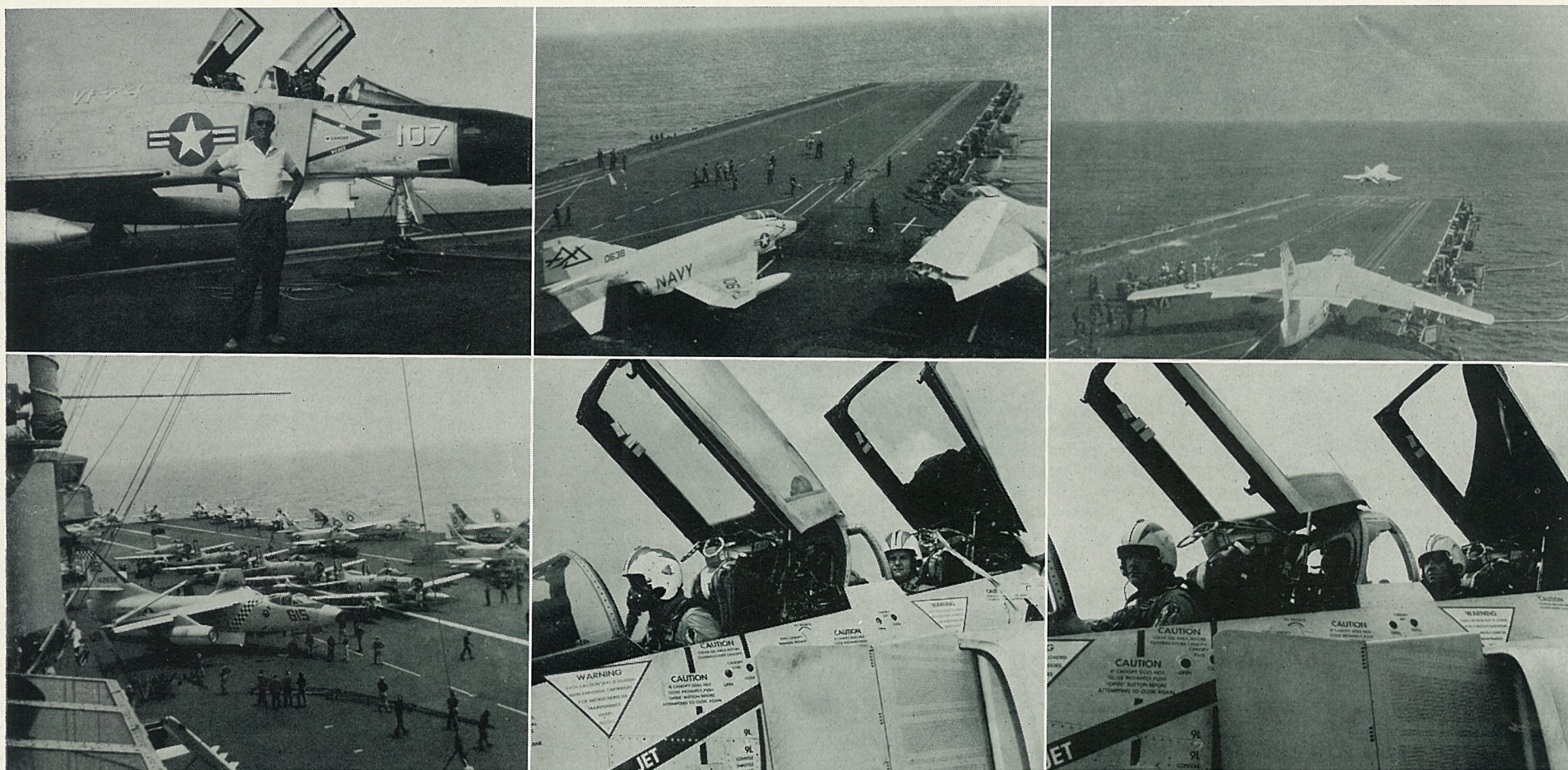


**VOCAL YOKELS**—The Circuit Riders, who have top billing at ARA-sponsored "Hootenanny" Sept. 14, 8 to 11 p.m. in ARA Clubhouse, are managed by GD/Astro employee C. D. Hollis.



**CO-OP TENNIS**—C. E. Praterelli, left, GD/Astro engineer at Vandenberg AFB, is tennis instructor in spare hours, taking part in cooperative summer program by ARA and City of Lompoc Recreation Dept. Some 75 tennis buffs now participate in the program.





AT SEA—Bill Allen and Lee Pinkel of GD/Fort Worth engineering served a week's tour of duty aboard USS Forrestal to gather design-input information for F-111. Allen is shown at top left beside F4B Phantom II and at lower right ready

for takeoff with LCDR. Aldo J. DaRozza. In lower center Pinkel is riding with Cdr. G. W. Ellis. At upper right F4B clears deck as A3D awaits "go" signal on catapult. Lower left shows deck storage.

## Retired Air Marshal to Direct Canadair Ltd. Sales in Europe

Appointment of Air Vice-Marshal (ret.) I. C. Cornblat as a vice president of Canadair in charge of European Operations was announced recently. Cornblat, whose offices will be in London, England, was, until his recent retirement, Comptroller of the Royal Canadian Air Force and a Member of the Air Council.

J. Geoffrey Notman, president of Canadair, explained that the problems facing Canadian firms in trying to get business in international aerospace markets were becoming increasingly serious.

"We at Canadair," he said, "have had a long and successful history of selling our aircraft products in the export field, but in the face of current conditions we feel we must do even more."

In his new position, Cornblat will coordinate and supervise all Canadair interests and activities in Europe.

Canadair is seeking to broaden its business opportunities to participate in a wider range of technical development agreements and production-sharing activities.

## Field Men Pass Intensive Training In Servicing GD/E Equipment

GD/Electronics at San Diego last month graduated six more computer experts to fill field assignments servicing GD/E's growing numbers of microfilm recorder customers.

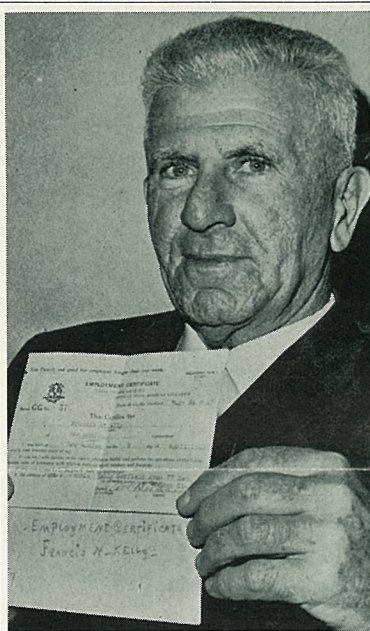
The course of instruction, conducted at GD/E's Hancock Street facility, involved intensive technical training in operating and servicing the S-C 4020, the S-C 3070, the S-C 1090 and the F50/53. Graduates demonstrated intimate knowledge of digital computers, photographic and cathode ray display principles and mastery of trouble-shooting and fault correction techniques.

"This particular class was one of our best," W. R. Walter, training group supervisor, commented. "Destined to be our representatives in the field, they are in extremely important positions in

dealing directly with our customers and must possess talents in diplomacy as well as technical matters."

A member of this class was Bernard Hauseux, who will be assigned to the Paris, France area. A senior engineer and graduate of the Ecole Supérieure d'Electricité, France's highest electronics school, he is a specialist in American-made electronic machine maintenance. He will service the S-C 4020 leased by the Commissariat à l'Energie Atomique in Paris, as well as the S-C 4020 unit leased by the United Kingdom Atomic Energy Authority.

GD/E-San Diego has more than a score of trained field representatives currently on assignment to customers coast to coast.



HE RANKS — Frank Kelly of Electric Boat holds employment certificate that permitted him to go to work 46 years ago when he was 14.

## EB's Kelly, With 46 Years, Claims He's Most Senior

With the recent retirement of Louis Drissell of Electro Dynamic division after 48 years of service, it now appears that Frank Kelly can claim the title of General Dynamics' most senior citizen.

Kelly, shipyard administrative manager at Electric Boat division, Groton, Conn., has been with the company 46 years. He started to work in 1917 when he was 14 years old!

Kelly recalls that before he could qualify for his office boy job he had to demonstrate that he "could read with facility, write simple sentences legibly and perform the operations of fundamental arithmetic." For a salary of \$4 he put in a six-day, 63-hour week.

Kelly has been with Electric Boat continuously ever since, and some of the times were tough. In the 20s employment shrank at one time to 66 (it is 17,000 today). And there were times when the company executives took bank loans to keep the company going. Kelly himself once mortgaged his home to meet a \$3,000 payroll.

With a flair for figures, Kelly gravitated into the financial side of the division.

Although the 63-hour week diminished over the years, it returned for Kelly with a vengeance during World War II.

"I worked seven days a week during the war. I didn't have one day off for three solid years."

## General Dynamics Men Take Lead in SAE Meet

A number of General Dynamics men from West Coast divisions will have an active part as chairmen and lecturers at the National Aeronautic and Space Engineering and Manufacturing conference sponsored by the Society of Automotive Engineers in Los Angeles Sept. 23-27.

M. D. Weisinger, chief of manufacturing research and development at GD/Convair, represented division president, J. H. Famme, on the executive planning committee and as an organizer for the forum on high temperature structures—materials, engineering design criteria and related manufacturing processes.

Dr. W. H. Steurer, GD/Convair development project engineer, will chair the forum with C. A. Ives, GD/Convair senior plant engineer, co-chairman and secretary.

Weisinger also has been requested to give a talk on "Laser Welding" at the Metal to Metal Aerospace Joining forum Monday. He will describe GD/Convair's research in the field.

R. W. Casebolt, also of GD/Convair, will discuss "Developments of a High Temperature (1,500 degree F.) Pneumatic Power System for Flight Vehicles" at the Wednesday session on auxiliary power systems for future aircraft.

V. G. Mellquist, GD/Astronautics chief of applied manufacturing research, is organizer of the Tuesday manufacturing forum on determining training needs. Chair-

man is R. A. Evans, GD/Astro manager of personnel administration, and J. A. Croft, chief of educational services at GD/Astro, co-chairman and secretary.

David Krause, GD/Astro chief of reliability and maintenance, is chairman and organizer of the session on reliability of systems at which J. R. Burnett and Takeharu Taniguchi, both of GD/Astro, will present a paper.

R. W. Gerber, GD/Astro design specialist, is chairman and organizer of the Thursday cryogenics meeting. At that time J. J. Gilbeau, also of GD/Astro, will talk on "Ground Handling Systems for Liquid Hydrogen."

Other GD/Astro men giving papers will be E. R. Foor, welding technology center supervisor; J. M. Garrison, senior design engineer; C. E. Edenfield, senior structures engineer; J. K. Lowry, structures engineer; K. M. King, design specialist; F. J. Nordby, reliability engineer.

G. E. Sylvester, GD/Pomona vice president of operations, is organizer of the Tuesday forum on material review board problems.

H. H. Hart, GD/Pomona factory manager, is chairman of the discussion of current problems and possible solutions with respect to purchased, subcontracted and contractor manufactured items. G. M. Ellis, GD/Pomona chief of quality audit and procedures, is secretary.



SCHOOL'S OUT—GD/Electronics at San Diego has graduated a new class of experts to serve in field assignments. Crouched are, from left, Donald C. Pacheco, Thomas S. Harris, Timothy Devlin, August G. Dale, Carl W. Gretzinger, students. Standing, from left, are W. R. Walter, training supervisor; Bernard M. Hauseux, student; J. J. Konen, S-C 4020 training; C. R. McGehee, product support manager; C. I. Smith, S-C 1090 training; Ron McClure, S-C 3070 training.



INDONESIA TEAM — GD/Convair field service reps, Dave Weitzman, Vic Korski, Don Maxion, Phil Smith, smart in black caps, popularized as part of Indonesian national garb, pose with Anwar Djamil (center) of Garuda Airways public relations in front of Djakarta mosque. GD/Convair reps are teaching maintenance courses at Garuda's main base in preparation for arrival of 990As.



## 'Waffle Building' Air Conditioned

By mid-October, General Dynamics/Astronautics employees in Bldg. 4, Plant 71, will find themselves in more comfortable surroundings as result of a major, company-funded facilities improvement project now in progress.

Approximately 90,000 sq. ft. of the single story "waffle building" surrounding GD/Astro's computer center and environmental laboratories will be air conditioned.

In many areas acoustical tile ceilings are being added and improved lighting diffusers installed.

Better working conditions to result from the program are expected to make significant contributions to improved reliability and workmanship.

The air conditioning addition was designed with a view to making maximum use of existing in-

stalled equipment.

Major phases of the project include installation of a 500-ton capacity centrifugal refrigerant compressor in the basement of the power house (Bldg. 7); construction of a new cooling tower adjacent to the existing tower between Bldg. 7 and the cafeteria; and installation of cooling coils in 44 air handling units in the existing Bldg. 4 ventilation duct system.

The improvements program is being conducted by GD/Astro's plant engineering (Dept. 250) under W. J. Stanley, manager. Engineers assigned to the job are R. W. Billmire, design supervisor; K. C. Hall, mechanical engineer; and H. C. Phillips, field engineer.

To avoid interference with normal operations in Bldg. 4, most of the work is being performed on second shift.

## R. M. Hatcher Now Director, Ops. Service

Robert M. Hatcher has been named director, operations service, for General Dynamics Corporation, succeeding R. A. Neale who continues as a member of the Corporate group on special assignments.

The announcement was made by Roger Lewis, president.

Organizational units within operations service include program analysis and evaluation; industrial engineering and operations support; reliability, quality control, value control.

Coincident with Hatcher's appointment, J. Y. McClure was named director, reliability, quality control, value control.

Hatcher, a native of Milbourn, Okla., attended schools in Wichita Falls, Texas, and later Texas State College and Southern Methodist University. He worked for North American Aviation, Inc. in Dallas, and later Ford Aircraft Division, Kansas City, where he was manager of final assembly before joining GD/Fort Worth in 1956. He was chief of organization and systems at GD/FW when he was assigned to GD/Convair in 1960 as manager of applied manufacturing research and process development. A year later he was named GD/Convair manager of operations planning and in 1962 was appointed director of industrial engineering. Subsequently he joined the Corporate staff.

McClure is a native of Georgia and attended the University of Southern Illinois, University of California and Curtiss-Wright Technical Institute. He joined Convair in San Diego in 1935 in sheet metal but left the company three years later to design racing planes. He returned in 1940 as an inspector, became a general supervisor in 1944 and the same year transferred to Fort Worth as chief inspector. In 1951 he was named GD/FW manager of quality control. Active for many years in the American Society for Quality Control, he was elected a fellow in 1959 and national president in 1960. He joined the Corporate staff in 1961.

## Crystal Appointed To Research Post

G. S. Crystal, formerly in industrial relations at General Dynamics/Electronics at Rochester, has been transferred to the Corporate Office in New York City as coordinator of personnel research, A. A. Hendrix, vice president-industrial relations, announced this month.

He reports to J. L. Budros, director of compensation and personnel development.

Crystal, a native Californian, received his bachelor's degree in industrial psychology from the University of California at Berkeley and his master's from Occidental. He joined GD/Astronautics in July, 1960, and served in industrial relations posts at Schilling AFB before shifting to GD/E in July, 1962.

## Centaur Flown To Canaveral

An experimental Centaur space vehicle was airlifted from General Dynamics/Astronautics to Cape Canaveral last week for a rendezvous with an Atlas booster that will lead to a test flight of the combination later this year.

This combination, now known as AC-2 (Atlas-Centaur flight vehicle No. 2) will be launched from Complex 36-A. The Atlas is now in position for the mating.

An Air Force C-133B aircraft carried Centaur cross country.

The pending flight test, one of seven scheduled to develop the top-priority Centaur into a fully operational space vehicle, will place the Centaur vehicle into an earth orbit.

Astronautics, builder of both Atlas and Centaur, is developing the combination for the National Aeronautics and Space Administration (NASA) under guidance of Lewis Research Center. It is scheduled to begin operational service in 1965 by carrying unmanned instrumented spacecraft to the moon. In addition, Centaur is being considered for a variety of planetary and interplanetary missions.

Primary objectives of the forthcoming AC-2 development mission are tests of new engines and a new separation system, evaluation of guidance system performance and demonstration of Atlas-Centaur's ability to withstand aerodynamic loads at speeds up to orbital velocity.

"The AC-2 is an advanced version of the vehicle that flew last year and includes many improvements," said Grant L. Hansen, Astro's vice president and program director-Centaur.

Centaur is 30 feet long and weighs 34,000 pounds when loaded with propellants.

Because of its key role in the

lunar exploration program and because it is pioneering liquid hydrogen technology, Centaur has been assigned the nation's most urgent aerospace priority.

## P. E. Culbertson, C. F. McCabe Get New Positions

Two manager-level personnel appointments within GD/Astronautics engineering functions have been announced by President J. R. Dempsey.

P. E. Culbertson has been named manager of the space station program (Dept. 580-2), reporting to F. J. Dore, director of advanced systems.

C. F. McCabe will assume Culbertson's previous post as man-



McCabe



Culbertson

ager of systems engineering and reliability — space launch vehicle program (Dept. 650-0), reporting to F. D. Applegate, assistant program director — engineering (SLV).

Culbertson joined General Dynamics in 1952 with GD/Convair and Convair General Offices, remaining until 1957 when he moved to Bendix Systems Division. (Continued on Page 2)



**NEW ARRIVALS** — Air Force officers recently assigned to Education with Industry program at GD/Astro use globe to indicate last duty stations. From left are Majors Michael J. Kentosh, Fred Gluck, John E. Doyle Jr., and Joseph F. Gricius Jr.

## Four AF Officers Begin 10-Month GD/Astro Tour

Four Air Force officers have been assigned to General Dynamics/Astronautics for the 1963-64 "term" of the Air Force Education with Industry program administered by educational services (Dept. 130-3).

They are Majors John E. Doyle Jr., Fred Gluck, Joseph F. Gricius Jr., and Michael J. Kentosh.

For the next 10 months they will phase through a three-part program of familiarization and on-the-job training introducing them to industrial practice in such fields as management, engineering and production.

The first phase—from their arrival Aug. 28 through September—is basic orientation, similar to that received by new GD/Astro employees.

From October through late January (Phase II) they will get a first-hand view of major GD/Astro functional groups under Vice Presidents F. J. Traversi, W. W. Withee, W. H. Patterson and E. D. Bryant, Controller E. G. Hill, and Director P. I. Harr.

During Phase III—February through June—they will fill on-the-job working assignments, interspersed with visits to other Southern California military and industrial installations.

Maj. Doyle is a native of Dorchester, Mass., and a graduate of Suffolk University School of Law,

while Maj. Gluck is a University of Texas grad from Brooklyn, N. Y.

Maj. Gricius—from New Bedford, Mass.—holds a bachelor's degree from Boston University and a master's in math from Columbia. Maj. Kentosh, a B-24 pilot in the European theater during World War II, and recently assigned to Vandenberg AFB, holds an engineering degree from University of Michigan.

Emory W. Thurston coordinates the Education with Industry program for GD/Astro educational services.

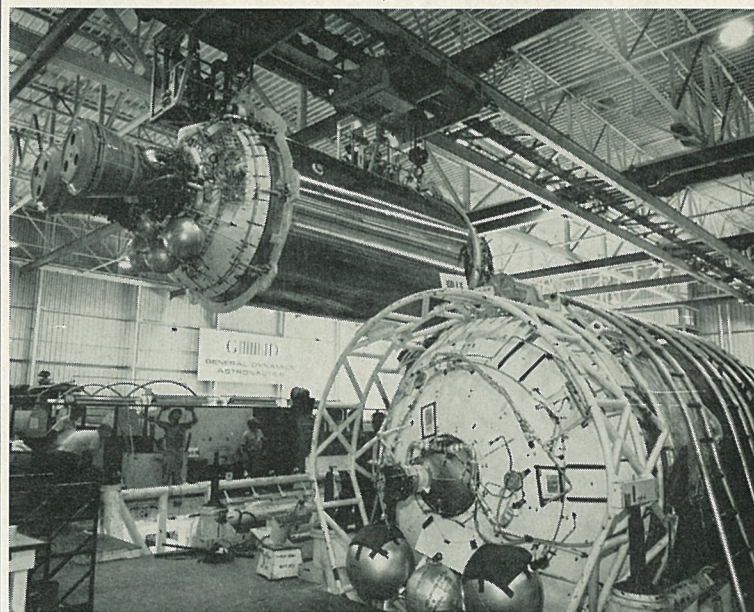
## GD/Astro Mgt. Club Will Meet Tonight

Frank Davis, president of General Dynamics/Fort Worth, will be guest speaker tonight (Sept. 18) when the Astronautics Management Club meets at the International Room, El Cortez Hotel.

Davis will discuss "Airplanes—Texas Style."

Astro President J. R. Dempsey and members of his staff will field questions in a special "Ask the Brass" session.

Entertainment will feature Hollywood and Las Vegas performers.



**ON THE MOVE** — This is Centaur vehicle shipped last week to Cape Canaveral for mating with Atlas on launch pad at Complex 36-A. Combination, to be launched later this year, is called AC-2 (Atlas-Centaur flight vehicle two).

## Citizenship Seminar Planned For Astro Management, Guests

Astronautics Management Club will conduct a special Citizenship Seminar for members, families and guests Oct. 5 at ARA Clubhouse between 8:30 a.m. and 12:30 p.m.

Theme of the affair will be "How to be a more effective citizen" with emphasis on the election process. There will be special displays, plus a special movie

shown during the sessions.

Guest participants include Charles Sexton, San Diego County Registrar of Voters; Lynn Taylor, local television personality; and representatives of various political groups in the area.

During a panel discussion, questions written by the audience will be answered.



## Log Book Entries



Robert E. Hibbs, Dept. 143-4, is latest to receive 25-year emblem at GD/Astronautics.

## Service Emblems

### MAIN PLANT

Service emblems due during the period Sept. 16 through Sept. 30:

Twenty-five year: Dept. 250-2, J. L. Pettit; Dept. 756-0, H. H. Ulmen.

Twenty-year: Dept. 250-5, N. E. L. Lara; Dept. 301-0, J. E. May; Dept. 504-3, W. H. Paine; Dept. 987-2, B. G. Longino.

Fifteen-year: Dept. 141-0, W. F. Hageman; Dept. 401-1, L. W. Stamps; Dept. 756-0, A. G. Helbig; Dept. 957-2, F. C. Lane; Dept. 976-3, H. E. Collins, R. H. Evilsizor.

Ten-year: Dept. 120-0, M. A. Young; Dept. 130-1, W. D. Galbreath; Dept. 142-1, M. E. Sanford; Dept. 148-1, C. C. Mitchell; Dept. 250, W. C. Hoffard, Baldwin Horn; Dept. 332-2, J. W. Taylor; Dept. 336-1, R. E. Bogardus; Dept. 344-3, R. B. Massingill; Dept. 364-0, W. W. Harper; Dept. 377-7, G. T. Woods Jr.; Dept. 378-0, B. E. Parker; Dept. 387-1, Margaret J. Cox.

Dept. 504-3, W. E. Olds; Dept. 563-1, E. K. Winslow; Dept. 596-2, Edward Philbin; Dept. 661-3, R. C. Zuranski; Dept. 673-0, W. T. Farmer, W. H. Weatherby; Dept. 682, R. L. Dubois, S. J. Weir; Dept. 715-0, George Hubert; Dept. 731-0, M. W. Nolan; Dept. 756-0, E. C. DeWitt; Dept. 781-0, C. J. Johnson; Dept. 782-0, W. J. VanHorn; Dept. 833-1, C. C. Nash; Dept. 835-1, L. P. Waislow; Dept. 844-0, Virginia J. Barber; Dept. 955-0, D. L. Tolman; Dept. 958-7, S. E. Blumberg; Dept. 974-2, Richard Paulson; Dept. 975-3, C. E. Stone.

## Papers Presented

BROWN — R. C., Dept. 598-3, "Fire trajectory program: an example of automated simulation techniques," IAS Meeting, Columbus, Ohio, Aug. 26-28.

FONTENOT — L. L., Dept. 541-5, "Wave groups in flexural motions of beams subjected to axial tensions . . ." and "Free vibrations of thin elastic pressurized cylindrical shells . . ." Fifth International Symposium on Space Technology, Tokyo, Japan, Sept. 2-7.

MYERS — J. N., Dept. 598-3, "Post-flight simulation," IAS Meeting, Columbus, Ohio, Aug. 26-28.

NEU — J. T., Dept. 596-2, "Passive storage of liquid hydrogen in space," Fifth International Symposium on Space Technology, Tokyo, Japan, Sept. 2-7.

POPPA — H. R., Dept. 592-5, "Growth of silver on molybdenite inside the electron microscope," Annual EMSA Symposium, Denver, Colo., Aug. 28-31.

SALZER — H. E., Dept. 591-0, "Divided differences for functions of two variables for irregularly spaced arguments," American Mathematical Society, Boulder, Colo., Aug. 26-30.

WOODINGTON — A. J., Dept. 140, "Partial calibration — reduces costs but not quality," ISAL Instrument Calibration Conference, Chicago, Sept. 9-12.

## Deaths

### MAIN PLANT

MAIER — Benjamin M., Dept. 835-2, Died Sept. 3. Survived by wife, June, son, daughter.

CAHALAN — Edward T., Dept. 020-0, Died Sept. 2. Survived by wife Lois, daughter, Kathleen.

## Retirements

### MAIN PLANT

ABERNETHY — E. P., Dept. 330-2, Seniority date, March 30, 1954. Retired Aug. 1.

KILBOURNE — Mrs. Mae S., Dept. 191, Seniority date, Feb. 19, 1951. Retired Sept. 3.

WEAVER — G. L. Jr., Dept. 130-1, Seniority date Sept. 17, 1950. Retired Aug. 30.

## Personals

### MAIN PLANT

Our sincere thanks for the many kindnesses shown us at the death of our baby.

Eileen and Bob Benzwi, Dept. 952-3.

Your kind expression of sympathy on the death of my husband, W. P. Maloney (Dept. 324-6), is gratefully acknowledged and deeply appreciated.

Sally Maloney.

Any blood donations to San Diego Blood Bank in the name of Elmer L. Hewitt will be sincerely appreciated.

L. W. Raper, Dept. 401-2.

# General Dynamics NEWS

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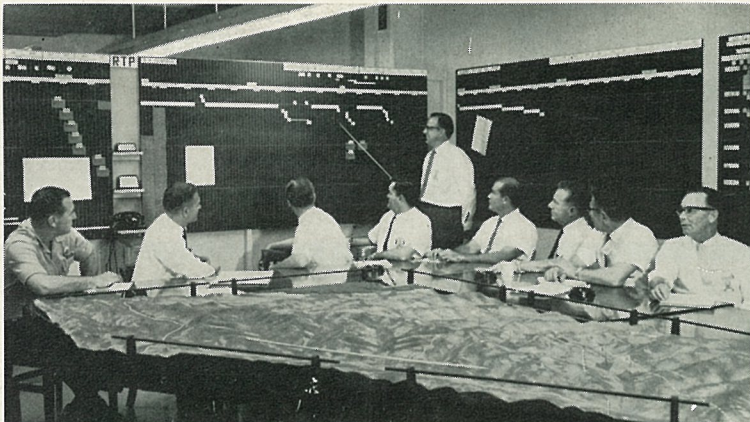
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IN SESSION — Daily briefings for management and customer personnel are now part of routine at Sycamore Canyon and GD/Astro Test Sites. Going over current status of all programs are, from left, H. W. Gillespie, W. F. Chana (base manager), Ken Gudge, Fred Lee, Joe Guss, George Thomas, H. F. Hampy, Frank DiPiazza and G. F. Lang.

## Briefings Pinpoint Problems, Speed Test Site Construction

A modern takeoff on the "head 'em off at the pass, boys" theme is being applied daily at Sycamore Canyon Test Site and the new GD/Astronautics Test Site now under construction.

Manager W. F. Chana has established daily briefing sessions

for top Astro and customer management to begin each work day. They are held primarily to appraise participants of situations that are or could be restraints to established schedules.

And they help pinpoint potential problem areas.

Details on how to resolve particular situations are not subjects for discussions at these sessions. However, after the briefings every effort will be expended to resolve special situations.

In addition to Astro personnel at the two sites, representatives of NASA, Air Force quality control and Pratt and Whitney are invited to sit in on each session.

Meetings are held in the "Command Post" which has up-to-date schedule listings, plus special "red flags" denoting possible or potential problem areas.

"Our major objective is the immediate recognition of problems," Chana said. "We can then notify the proper people to assure on or ahead-of-schedule performance on all programs, large and small, in our areas."

## Self-Improvement Courses Will Open

Another in ARA's popular self-improvement courses for women will open Sept. 24 at the John Robert Powers Studio, 426 B St., San Diego.

GD/Astro women employees and wives may register for the seven-week course by calling 234-7263 between 9 a.m. and 9 p.m., weekdays.

Instruction consists of seven classes meeting on Tuesdays from 7:30 to 9 p.m. Total cost is \$25 per person, and a \$10 deposit will hold class reservations. Classes are limited to 15 persons.

## Charger Tickets Sell at Discount

A limited number of San Diego Charger home game tickets are available through employee services at Astronautics at a discount.

Tickets normally selling for \$4 may be obtained for \$3 each. Tickets are available only at the main plant employee services office, Bldg. 8.

## Rockhounds to Send Exhibit to Show

First large display to be made by the club as a whole will be exhibited by ARA Rockhounds at the San Diego County "Gemboree for '63" at Del Mar Fairgrounds, Sept. 21 and 22.

The Astro group plans to show 12 cases of jewelry, minerals, fossils and other examples of lapidary art at the show, which will be held in Bing Crosby Hall.

Hours are 10 a.m. to 9 p.m. on Saturday, 10 to 6 p.m., Sunday.

## PHYSICAL CULTURE GROUP TO MEET

Physical culture will get a "shot in the arm" through newly completed facilities in ARA Clubhouse. Commissioner Clyde Burkhardt said plans will be discussed at a meeting at 7:30 p.m., Sept. 23.

## Culbertson, McCabe Get New Positions

(Continued from Page 1)  
sion as head of aeronautics and propulsion.

In 1958 he joined GD/Astronautics. He holds BS and MS degrees in aeronautical engineering from Georgia Tech and University of Michigan respectively.

In his new assignment, Culbertson will direct and coordinate all GD/Astro activities related to the space station program.

McCabe, a Dynamics veteran, joined Convair in 1936, and has served in a variety of engineering administrative posts, including superintendent of B-36 modification and San Diego night manager. Among his previous GD/Astro assignments was that of chief electrical engineer (Dept. 544-0).

## Mellinger Appointed To Systems Position

Harry A. Mellinger has been named manager of systems engineering and reliability (Dept. 380-0) for GD/Astronautics.

Atlas weapons system (AWS) program by W. L. VanHorn, vice president and program director.

Colorado born, Mellinger attended San Diego public schools and San Diego State College. He holds a bachelor's degree from University of Maryland, and has attended George Washington University, Washington, D. C.

His General Dynamics service dates from 1940 when he joined GD/Convair.

Mellinger's Convair assignments included work as a senior design engineer, senior structural engineer, and assistant project engineer before he transferred to GD/Astro in 1960 as project engineer (Dept. 510-3).

He joined the AWS project in 1962 as assistant chief engineer-mechanical design, a post he held until his recent appointment.

## Stephenson Transfers To Post at GD/Astro

F. A. Stephenson, with GD/Convair since 1941, except for a World War II stint as an Air Corps pilot, has joined GD/Astronautics as chief engineer-propulsion (Dept. 528-0).

The appointment was announced earlier this month by Mort Rosenbaum, vice president - research, development and engineering. Stephenson will report to W. W. Withee, vice president-engineering.

Stephenson was born in Kansas, and educated in Colorado where he earned an engineering degree at University of Colorado, Boulder.

His GD/Convair service includes assignments in inspection, as a thermodynamics engineer and group engineer, chief of environmental analysis, and chief technical engineer.

Before joining GD/Astro, Stephenson was manager of technical engineering for GD/Convair.

Stamp Club honors King and Christian

ARA Commissioner Art King, Dept. 641-1, and Willie Christian were honored by Astro Stamp Club for displaying the best exhibits at the group's August meetings.

King presented a general foreign display, while Christian showed British coronation issues.

Stamp Club is now planning a county-wide stamp show to be held early next year.



NEAT TRICK — In top photo Engineer Al Wilkins, GD/Astro Dept. 662-6, discusses explosive used to cut steel door with Dept. 756's J. R. Bowles, left, and C. R. Jines. Below, Wilkins watches Jines tape charge for final "cut."

## Explosive Tape Used in Cutting Big Steel Door

Faced with a four-day project of cutting a door opening in a big stainless steel tank recently, GD/Astronautics engineering test support (Dept. 756) trimmed the time, the cost, and finished the job with a "bang."

The heavy tank, 10 feet in diameter and about 20 feet long, is destined for use as a test cell in an installation scheduled for GD/Astro's Sycamore Canyon Site.

Plans called for cutting a 5-by-10-foot opening, which will later be fitted with a pressure-sealed door, in the side of the tank.

Bob Franklin, Dept. 756 second shift foreman, considered the orthodox methods—using a cutting torch or saw—then decided to try using a shaped explosive charge to do the job faster and improve the quality of the cut.

Al Wilkins, engineer in Dept. 662-6, was experienced in the technique, so Franklin recruited him.

The tank was shifted to GD/Astro's hydro-chemical forming area east of the main plant, and when the door opening had been marked on both its inner and outer surfaces, Wilkins directed Dept. 756 personnel in taping the explosive charge in place.

Jet cord 30-grain lead-covered shaped charge was used to outline the door opening on the tank's outer surface. The charge, looking like heavy wire with triangular cross-section, was detonated (from a safe distance) with an electrically-fired cap.

On detonation the charge disintegrated, leaving a neat cut where it had been attached to the tank surface.

This process was repeated from inside the tank and the door section toppled out.

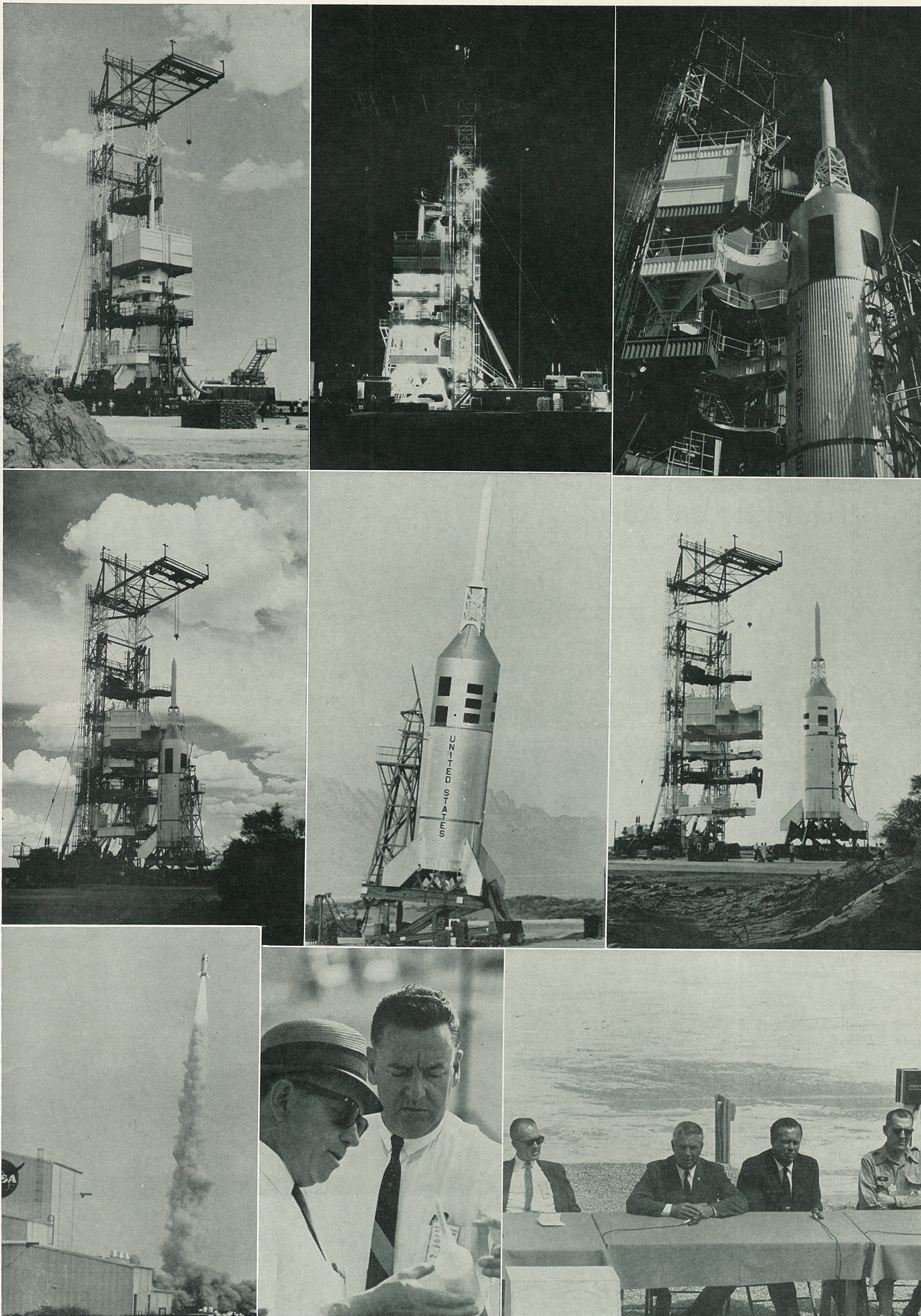
## Snow Skiers to Meet, Make Winter Plans

First sign of approaching winter is the initial meeting of ARA Snow Ski Club set for 7:30 p.m., Oct. 2 in ARA Clubhouse.

On the agenda is general organization, election of officers, planning for the annual Sno-Ball in November. Registration will be accepted for dry land ski instruction starting Oct. 6.

ARA Snow Ski Club is open to all GD/Astro employees and dependents. Besides organized ski activity with a congenial group, the club offers reduced rates on ski instruction throughout the season, and subsidizes a portion of the expense of group trips to snow areas.

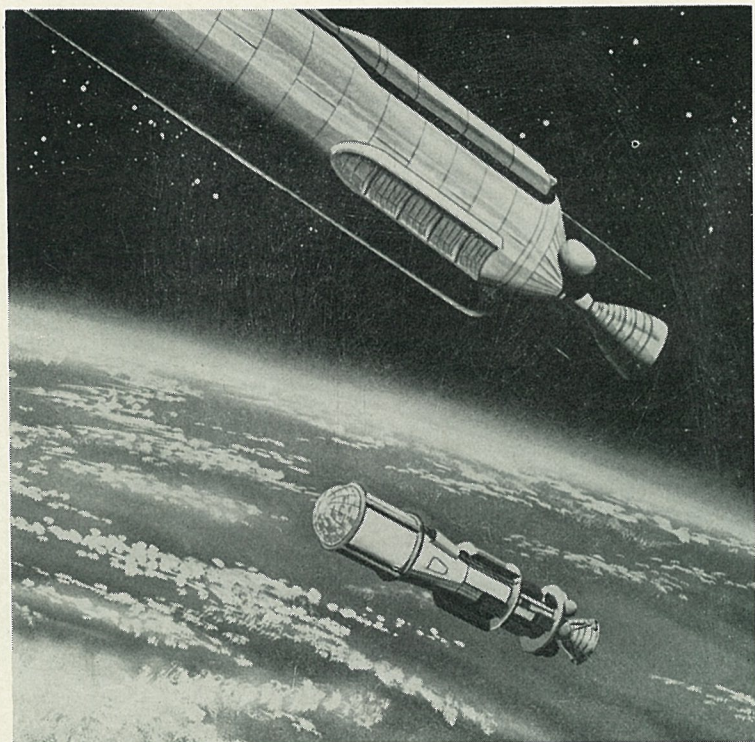




"CLEAN" LAUNCH — Sequence photos taken during countdown hours and blast-off of Little Joe II, GD/Convair-built launch vehicle, at White Sands Missile Range, N.M., Aug. 28, shows pre-launch activities during preceding day and night leading to Wednesday morning firing of "bird." Termed "extremely satisfactory," 99-second flight qualified Little Joe II as launch vehicle for NASA's Apollo Program spacecraft testing. Test objectives of booster integrity, performance, dynamics, stability were performed perfectly, say GD/Convair officials on spot. Data accumulated on drag, flutter, temperature, accelerations demonstrated that objective requirements could be met. In words of NASA personnel participating, "it was one of cleanest and most professional" launches observed. Little Joe II reached height of 24,000 ft. at speed exceeding Mach 1. Out of 62 telemetered measurements 60

were obtained right to impact; all 17 landline measurements operated satisfactorily. There was no apparent roll and practically no yaw. Launcher stood up better than predicted. Lower center, GD/Convair President J. H. Famme talks over launch with New Mexico Governor Jack M. Campbell. At far right are top NASA observers: Robert O. Piland, acting manager—Apollo Spacecraft Project, NASA-MSC; Walter C. Williams, deputy director mission requirements and flight operations, NASA-Manned Spacecraft Center, Houston, Texas; Wesley E. Messing, resident manager NASA-MSC at WSMR; Col. J. C. Bane, deputy commander, WSMR. This was first flight test connected directly with development of Apollo spacecraft to carry three-man crew to and from moon. Little Joe II will proof North American-built Apollo craft before actual space missions.





**GOING IT ALONE**—GD/Astronautics will build five orbiting laboratories, called SATAR, for Air Force for scientific probes. In this sketch by John Sentovic, SATAR is shown breaking away from Atlas which carried it "piggyback" into space. "Hitchhiking" SATAR which gets free ride on Atlas launched for other programs is expected to provide scientific knowledge at fraction of cost of other type orbiting spacecraft.

## Orbiting Laboratories To Catch Rides on Atlas

Money-saving orbital laboratories that ride into space aboard Atlas vehicles being launched for other purposes, then go into orbit on their own power, are being developed at General Dynamics/Astronautics.

Called SATAR (Satellite-Aerospace Research), the program calls for five orbital laboratories to be built for the Air Force's Office of Aerospace Research (OAR).

These hitchhiking laboratories will provide a means of conducting a wide range of scientific experiments in orbit at a fraction of what they would cost other-

wise, according to Sam L. Ackerman, Astro's vice president and program director for electronic programs.

SATAR will be capable of circular or highly eccentric orbits, high-altitude probes, and high-velocity re-entry into the atmosphere. It will be able to carry experiments weighing several hundred pounds.

Bullet-shaped, 12 feet long and 30 inches in diameter, SATAR will have two major sections, propulsion and payload. In the first will be a solid propellant engine, guidance and attitude control, telemetry, and power subsystems for injection into orbit. In the second will be power, telemetry, command systems and the scientific payload. The latter is designed to provide maximum versatility so that a wide range of scientific experiments can be accommodated without expensive changes. Supporting systems can be arranged for long or short orbit life at minimum cost, Ackerman said.

SATAR will be positioned "piggyback" just above Atlas' propulsion section. As Atlas engines shut down, high in space, the SATAR will separate with an attitude control system preventing it from tumbling and positioning it for injection into orbit. After about 15 minutes of coasting time, SATAR will ignite its engines and complete the orbit injection.

"The SATAR program takes advantages of Atlas' ability to carry excess loads and benefits the nation's entire scientific community," Ackerman added.

Testing of the orbital laboratories will begin this fall with initial flights slated for the spring of 1964.

SATAR is an outgrowth of the nonorbital Scientific Passenger Pod program Astronautics has conducted for OAR since 1961.

Nonorbital pods were of two types—a standard pod and a recoverable pod. The former furnishes information by radio until it burns on re-entering the earth's atmosphere. Recoverable pods can bring experiments back safely through the atmosphere and land them for recovery.

While OAR provides direction for the program, contract surveillance is the responsibility of Ballistic Systems Division.

### WASH. U. ALUMNI TO MEET SEPT. 30

University of Washington Alumni have been invited to a cocktail party, 6:30 p.m., Sept. 30 in Cuyamaca Club, U. S. National Bank Bldg. Purpose is to form a local alumni organization. Contact is Don Welch, GD/Astro ext. 3350.

## In-Plant Study Will Commence In Nine Fields

There are still openings for General Dynamics people at in-plant courses started this week under sponsorship of GD/Convair educational services in cooperation with San Diego Junior Colleges.

Registration will be accepted until Sept. 25, said Wayne Turner, educational services coordinator.

Although all of the nine courses will be held at GD/Convair Plant 1, they are open to General Dynamics people connected with any San Diego division—GD/Convair, GD/Electronics, GD/Astronautics, and General Atomic.

Turner especially drew attention to the course in Basic Hydraulics, which is being offered in-plant for the first time. He said that it is particularly valuable to persons working toward their FAA airframe and power-plant licenses as well as important to people now employed in any phase of hydraulic work.

This course is taught by Walter Gill on Wednesdays, 4:15-7:15 p.m., in Bldg. 14, Room 7, at Plant 1.

With the exception of the course in Technical Specifications Writing, the following are still open for enrollment: Written Communications for Supervisors; Introduction to Technical Writing, Intermediate Technical Writing, Technical Writing Workshop, Basic Hydraulics, Basic Electricity, Basic Electronics, Basic Electronics—Theory and Components.

Turner may be contacted at Plant 1, ext. 491.

### Mass Said in Atlas Silo at Altus AFB

Unless someone can refute the claim, Chaplain (Capt.) Gerard M. Brennan of Altus AFB, Okla., is the first Air Force chaplain to say Mass deep within an Atlas silo launch center.

Chaplain Brennan performed the religious services recently after spending 26 hours at the Atlas launch complex. (He slept only two hours.)

Explaining his visit, Chaplain Brennan said:

"I feel that it is my responsibility to understand the factors involved in the missile operation so I can better understand the men I am here to serve."

## Computer Customers Visited in Europe

Robert Hayde, senior customer engineer for GD/Electronics at San Diego, left last week for Europe on a six-months' assignment which will take him to locations of major computer users in Western Europe.

He will join E. J. Jelen, European representative-electronics for General Dynamics, to provide technical assistance during the tour of potential computer customers in Europe.

In his GD/Electronics post, Hayde reports directly to Charles McGehee, GD/E manager of product support at Plant 2.

## Surveyor Program Scheduled on Coast

General Dynamics people will have an opportunity to hear a detailed discussion of the Surveyor program at the Oct. 3 meeting of the San Diego Chapter, Aerospace Electrical Society.

W. E. Giberson, Surveyor project manager, NASA Lunar and Planetary Project Office, Houston, Texas, will describe the program which will lead to an unmanned exploration of the moon's surface prior to the Apollo manned landing.

All interested GD people are invited to attend the session in the IAS Bldg. on Harbor Drive at 7:30 p.m.

Heading the local chapter as current president is T. W. Ochodnicki of GD/Convair engineering.

## Model of Mercury Ops Room Given Smithsonian by GD/E

General Dynamics/Electronics-San Diego presented a scale model of the Project Mercury Operations Room to the Smithsonian Institution in ceremonies at Washington, D.C., last week.

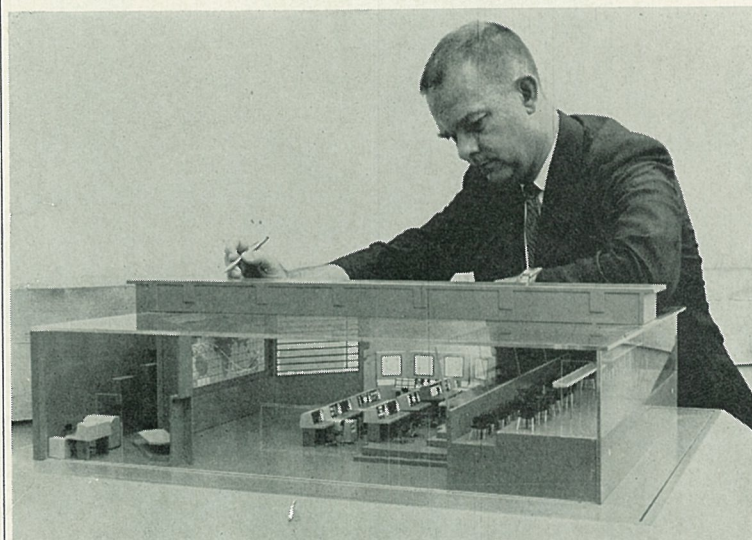
The model is an exact replica of the operations room which was the vital nerve center during all of NASA's Mercury flights from Cape Canaveral. It will be placed on permanent exhibit in the National Air Museum along with the Mercury capsules occupied by Alan Shepard and John Glenn.

Congressman Bob Wilson (R-SD) made the presentation on behalf of General Dynamics to Dr. Leonard Carmichael, secretary of the Smithsonian Institu-

tion, and Philip S. Hopkins, director of the National Air Museum. George M. Low, Deputy Director Programs, Office of Manned Spaceflight, represented NASA.

GD/Electronics officials at the ceremony were General Manager John L. Lombardo, Arch H. Wisdom, manager of research and engineering for data products, and Payne B. Johnson, manager of communication.

Wisdom was GD/E program manager for the Project Mercury monitor and control display systems which were designed and built in San Diego and installed at Cape Canaveral and Bermuda.



**HISTORIC MODEL**—Arch Wisdom, manager of research and engineering for data products at GD/Electronics-San Diego, inspects scale model of Project Mercury Operations Room before shipment to Smithsonian Institution where it will be on permanent display.

## Vest Pocket TV Sets May Result From Studies of Metal Films

Slicing it thin is the job of the physical electronics laboratory group at General Dynamics Electronics-Rochester. And thin means really thin as researchers into properties of metals produce almost invisible "films" of common metals, looking toward the time, not too far away, when thin film electronic circuits may make possible match-box size television sets or vest-pocket computers.

In discussing work with thin films, which has been carried on at GD/Electronics for several years, Dr. Carl Drumheller, manager of the physical electronics laboratory, says that many ordinary materials show strange and amazing properties when made exceedingly thin.

And thin is really thin when a stack of a million such films would barely be an inch high, or 5,000 could be slipped into a crack too small for a sheet of paper.

Some of the new films under study are only 10 atoms thick, said Dr. Drumheller, who presented results of the studies before the International Commission for Optics in Marseilles, France, Sept. 8-15.

In his paper on "Theory of the Optical Properties of Thin Polycrystalline Metal Layers," Dr. Drumheller explained that pur-

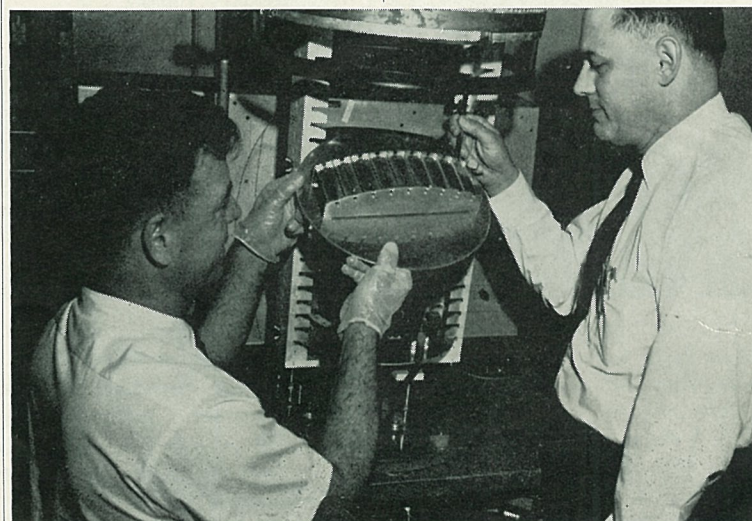
pose of the research is to learn as much as possible about the fundamental electrical properties of various metals and insulators when they are so thin.

## Author Completes Booklet on Fatigue Under Navy Contract

Final material for the design manual on structural fatigue compiled over the last year and a half by C. R. Smith, design specialist in GD/Convair fatigue laboratory, has been submitted to the Bureau of Naval Weapons for approval.

"Tips on Fatigue," as the handbook will be known, contains general information on structural fatigue for draftsmen, shop foremen and inspectors. Cartoons illustrating the do's and don'ts in design of structures were drawn by Willy Goldsmith and Tony Adams, GD/Convair illustrators.

When published, it will be available through the Government Printing Office, Washington, D.C. Preliminary copies have been sent to other GD divisions and placed in the GD/Convair engineering library.



**THIN SLICES**—Dr. Carl Drumheller, right, and Joseph Galen, GD/Electronics-Rochester, pursue "thin film" research into properties of metals.

## Day Now Chairman Of Graphic Society

H. B. Day, GD/Convair graphic reproduction supervisor, was installed first chairman of the newly-organized Society of Reproduction Engineers, San Diego Chapter, at ceremonies Sept. 16 at La Mesa Cotton Patch.

C. J. Taylor of GD/Astronautics is first vice chairman, and Charles Barber of GD/Electronics, second vice chairman.

Charter of the new group was presented at the Monday meeting. Membership already has reached 68 people in the San Diego area, who are engaged in any phase of the reproduction field.

## Heller and Albert Join Value Panel

Two GD/Astronautics men, E. D. Heller and Sid Albert, took key roles in a special panel discussion on "Value Engineering in Municipal Government" Sept. 10 at the King's Inn, San Diego.

The affair, under sponsorship of the San Diego Chapter, Society of American Value Engineers, featured a panel of top municipal officials from throughout San Diego County. Heller, Astro's manager of value control, made a presentation on the philosophies and techniques of value engineering. Albert acted as moderator.

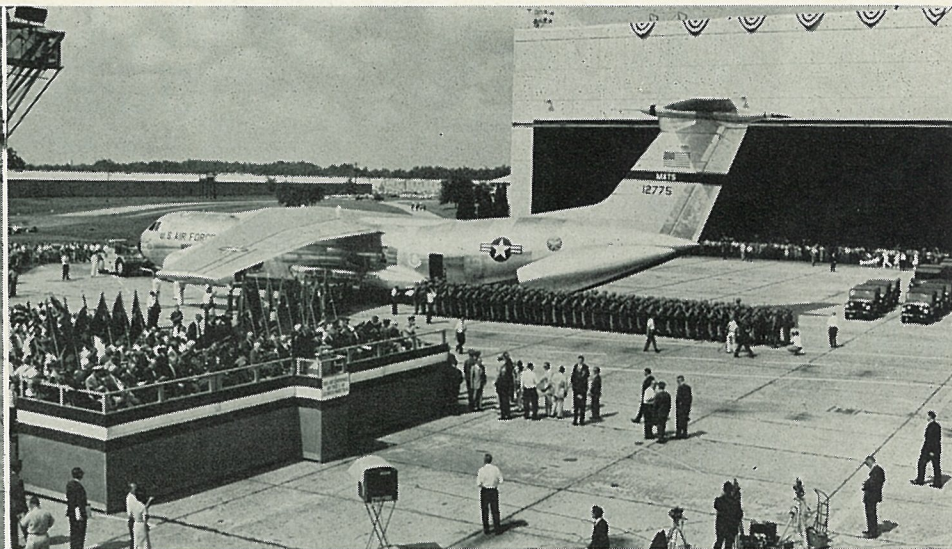
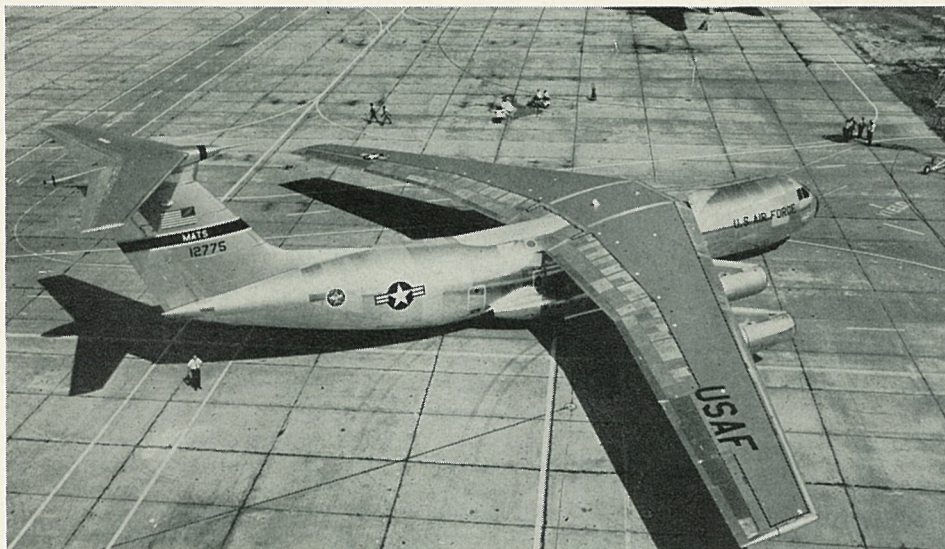
## Information Display Group Names Prexy

James H. Redman of GD/Electronics-San Diego has been chosen president of the San Diego chapter of the Society for Information Displays.

The non-profit organization was formed in 1962 to encourage the scientific, literary and educational advancement of information display and its allied arts and sciences.

Redman, who has been with General Dynamics for 10 years, is requirements representative, based at GD/E Plant 2.





**C-141 UNVEILING** — At left, first Air Force C-141 StarLifter spreads its wings across the concrete apron at Lockheed-Georgia Co., Marietta, Ga., after Aug. 22 rollout. (Note relative size of spectators!) World's largest transport can air-

lift 90,000 pounds and has wing span of 160 feet. At right is shot during coming-out ceremony at Marietta plant, attended by key personnel from GD/Convair which is building empennages for huge craft. First flight is set for December.

## Atlas Agena Selected For Lunar Trips

GD/Astronautics' Atlas space launch vehicle, in combination with an Agena second stage, has been designated to launch five instrumented spacecraft on close-range lunar photographic missions by 1966.

The announcement was made last month by National Aeronautics and Space Administration (NASA), whose Langley Research Center, Hampton, Va., issued requests for proposals to manage the lunar orbiter mission.

The moon orbiter brings to three the number of Atlas-launched spacecraft to make exploratory lunar missions in advance of the Apollo manned lunar landing mission.

Others are Ranger (hard lunar landing spacecraft) to be launched by Atlas-Agena, and Surveyor to make a soft landing after launch via an Atlas-Centaur combination.

## EB's J. V. Leonard Joins Naval Panel

J. V. Leonard, engineering design manager at GD/Electric Boat, joined senior Naval officers Sept. 14 for a panel discussion on "Naval Shipbuilding Through the Next Decade."

The panel was sponsored by the Navy League at its East Coast Regional Convention in Boston.

Participating were Rear Adm. William A. Brockett, Chief of the Navy's Bureau of Ships; Rear Adm. F. V. Hiles, director of the Navy's Ship's Characteristics Division; and Capt. F. C. Jones, Commander, Boston Naval Shipyard.

## GD/Astro Engineers Finish UCLA Course

Three GD/Astronautics engineers were among 229 participants in a special Reliability and Statistical Methods in Industry course held by the engineering department, UCLA.

W. F. Rice, senior quality control engineer; Curtis M. Smith, senior reliability engineer; and John Matias, senior standards laboratory engineer, received certificates of completion.

## GD/Astro Technical Publications Known as 'Missilemen's Bible'

Initial Air Force requirements of General Dynamics/Astronautics in developing the Atlas weapon system centered primarily in three major fields — hardware, personnel and technical data.

Today, Astronautics' customer services department under Director R. C. Harbert concentrates a majority of its efforts in these same fields.

Service parts (hardware spares) and service engineering (direct assistance to Air Force missile crews) are two major functions involved. The third, technical publications, carries on a task it has performed for years.

The output of this group in the initial activation of Atlas bases is now legendary. If pages of all publications issued were laid end-to-end, they would stretch 2½ times the distance covered in the three-orbit flight of Astronaut John Glenn.

Subsequently, thousands of change-pages have been issued and distributed to cover changes in the Atlas and its support equipment.

Each of these pages has been deemed as important to the overall Atlas mission as the hardware items they cover for a simple reason — Air Force regulations specify Strategic Air Command missilemen must follow instructions and procedures in technical manuals to the letter. Thus they become, in a sense, the missileman's "Bible."

Astronautics shoulders an unusual burden in preparation, verification and distribution of these publications. They must be exact to the smallest detail. They must be written in the clear, concise language of the missileman. Illustrations and diagrams must be perfect. And the publications must be ready and available when and where needed.

Handling this task is a group considered unique in the aerospace industry, both in size and complexity.

A. H. Gross, manager of technical publications, heads the function that includes writers, editors, illustrators and reproduction specialists as well as direct representatives of such important functions as purchasing, communication, receiving, and various reliability control functions.

This task force works out of Bldg. 51 at GD/Convair.

Also in the same area is an unusual group of Air Force representatives making up what is known as the Central Technical Order Control Unit (CTOCU).

The presence of the CTOCU is indicative of the vital interest shown by the Air Force in Astronautics-prepared technical publications. It is, in brief, a group that speaks the language of the SAC missile crews, the logistics support units and the Air Force command units. It provides invaluable assistance in final decisions affecting every type of technical publication. And it has made possible expediting problem solutions affecting Atlas publications.

## NASA Arranges For Agena Use

A new agreement involving the Atlas-boosted Agena launch vehicle has been signed by the National Aeronautics and Space Administration (NASA) and the Air Force.

The Agena is an Air Force-developed vehicle which NASA has used previously on such programs as Mariner, Ranger, etc.

Under terms of the agreement the Air Force will continue to have design, engineering and acceptance testing responsibilities for the basic Atlas vehicle and the Agena D stage with NASA procuring these vehicles from the Air Force.

Modifications for special missions in the basic vehicles will be the responsibility of NASA, including such items as the shroud and adapter, trajectory calculations and integration of the space launch vehicles. For these, NASA will make direct procurement arrangements.

NASA launches of the Atlas-Agena combination will be centered at Complex 12 at Cape Canaveral, while the Air Force will continue to use Complexes 13 and 14. GD/Astronautics has conducted launches from all three complexes over a period of years.

Not covered in this agreement are Atlas-Agena vehicles for the Gemini program.

Updating of existing publications to keep pace with constant changes in the Atlas weapon system configuration constitutes the majority of the present work load. In addition, there are technical reports to Air Force and space agencies concerning Astronautics scientific, engineering and hardware programs, with the trend within the aero-hardware programs.

Thus, technical publications serves any and all Astro programs.

Some indication of the magnitude of updating required in existing publications is evidenced in the fact that each Atlas launch complex has its own technical library of approximately 250 separate manuals containing over 250,000 pages of technical data.

Preparation of contractual technical reports for Astro customers is another key function in technical publications in keeping with the trend within the aerospace industry toward more study contracts involving little or no hardware. These reports are often the only deliverable items on a contract and even more often as the only items seen by the customer's decision-making management.

Providing all skills required for this type work is a special reports center which has recently been expanded to meet requirements. Services range from report planning through publication and distribution.

Recently, Harbert reviewed Astronautics' pioneering work in the field and forecast increased importance of technical publications to Astro in the future.

"We can emphasize our experience, innovations we have introduced and the integrated publications capability we possess in bargaining for future business," Harbert said. "And this business could well include services to other defense and space industries."

Key publications leaders include: J. D. Willis, chief of AWS manuals; D. P. Bender, chief of special documentation; A. C. Perry, chief of publications operations; and H. B. Cleveland, program office support project engineer.

## GD MEN PARTICIPATE IN VALUE MEETING

F. J. Traversi, GD/Astronautics vice president—administration, will serve as panelist today (Sept. 18) at a Value Assurance Symposium, sponsored in Los Angeles by Department of Defense and National Security Industrial Association.

Attending from GD/Convair will be President J. H. Famme and H. P. Williams, manager of value control.

E. D. Heller, value control manager at GD/Astro will also attend, along with a representative of each major GD/Astro function.

The one-day program and panel discussions will deal primarily with value engineering requirements for improvement of defense procurement and reduction of logistics costs.

## Contract Increased For BuShips Radios

General Dynamics/Electronics—Rochester has received an addition of nearly \$500,000 to its recent award of more than \$4 million for single sideband radio equipment from the U.S. Navy Bureau of Ships. (General Dynamics NEWS, Aug. 7.)

The current supplement to the original contract awarded in June is for an additional quantity of radio receivers of a special design. Initial contract called for production of more than 300 sets of the AN/WRC-1 transceiver, and more than 1,000 separate R-1051/URR receivers.

The service-approved receivers are for general purpose communications to replace those now in use by the military.

## Sutherland on Tour Of Duty at Groton

Robert E. Sutherland, veteran GD/Astronautics salary administrator in industrial relations department, has reported to General Dynamics/Electric Boat for a special 30-to-60-day assignment.

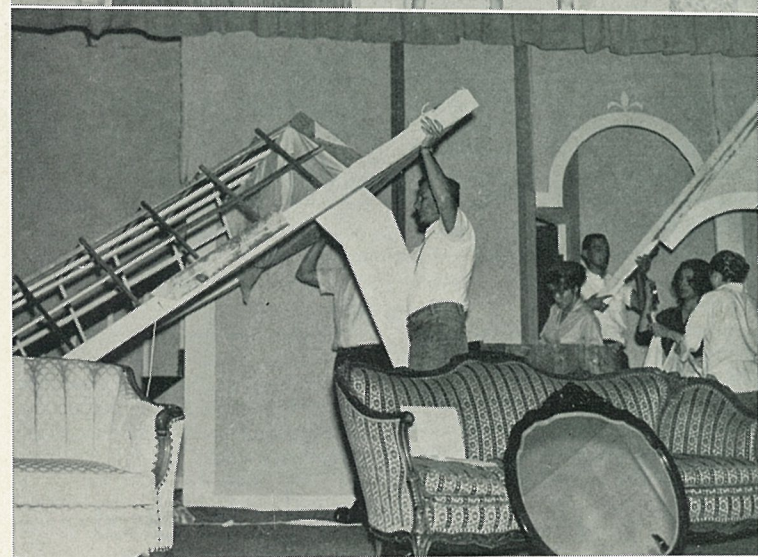
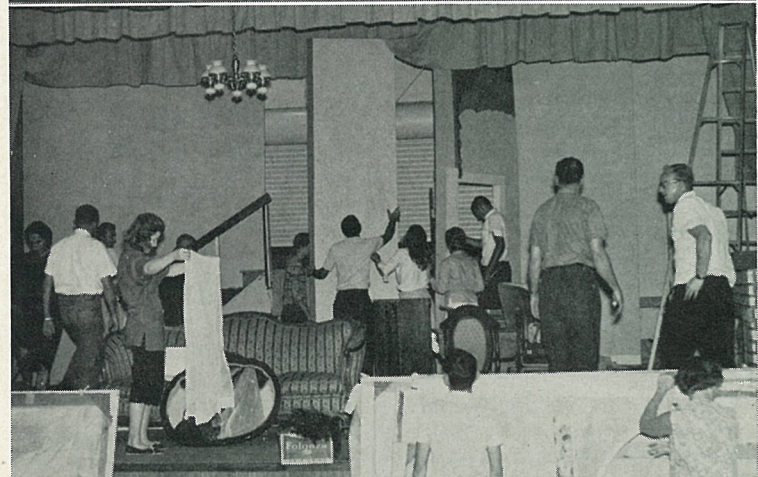
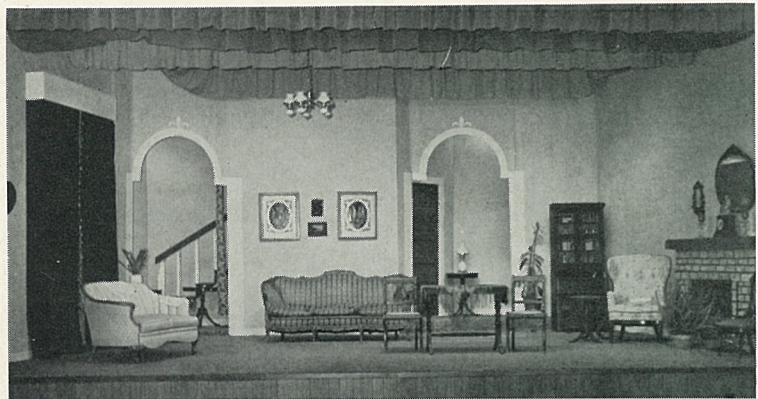
Sutherland will work with Elmer R. Johnson, GD/Electric Boat's director of industrial relations, in coordinating policy matters in compensation and salary administration.



**PUBLISHERS** — Technical manual preparation is big task for GD/Astronautics. At right is typical planning conference, with Jean Fortier, reproduction typist, Ray Dubois, engineering writer, O. B. Zimmerman, illustrator, Arthur Templin, technical editor, making decisions. Second from left, Jerry Hornyak, illustrator, prepares art work, which is important part of operation. At far left, in GD/Convair printing shop

are Joe Somadge, GD/Convair Dept. 16, Leonard Aquillard, Astro technical publications, Herb B. Day, GD/Convair graphic reproduction supervisor, Dick Decker, Astro purchasing, R. M. Young, Astro communication representative. Stockpiling copies of publications is another aspect. Second from right, Walt Brees, reliability control, and Nancy Sawyer, Dept. 315 clerk, check updating.





**COMING DOWN** — Top photo shows set for "The Heiress" as audience saw it over three weekends. Last performance ended at 11:30 p.m. Aug. 24 and at 11:35 stage (center and lower photos) became scene of frantic activity as cast pitched in to dismantle. — Photos by Pat Givens.

## Cast and Backstage Crew 'Strike' Minutes After Performance Ends

When the final curtain rang down last month on a seven-performance run of "The Heiress," Astro Players' most recent offering, the group began to "strike"—scenery, that is.

The expression is pure theater. It refers to shattering an illusion: stripping away the sets, scenery, on-stage decor which, in the course of the "Heiress" run, enabled Astro Players to transport those who attended from San Diego of the present to New York

of the 1850s.

When the final show ended at 11 p.m., Aug. 24, the entire crew turned to on the strike. By the time on-stage players had removed make-up and the job was organized, it was after 11:30.

The job was finished by 1 o'clock. And although the theater buffs were "beat," some went out to celebrate. Others simply went home. For all, "The Heiress" was successfully closed.

## Gas Dynamics Class Convenes

A 20-week course in "Elements of Gas Dynamics" is being offered to GD/Astro engineers, mathematicians and physicists under auspices of educational services (Dept. 130-3).

First class was held yesterday (Sept. 17), 5-7 p.m. in the space science conference room, Plant 71, and will continue with meetings each Tuesday and Thursday through Feb. 6. Next session is tomorrow (Sept. 19).

The course, conducted by Dr. Jan Rosciszewski, will cover fundamental equations of gas dynamics, shock tube applications, internal combustion motors, airfoils and advanced propulsion devices.

Prospective students holding bachelor's degrees in engineering, physics or mathematics may contact Laura, ext. 1935, Plant 71, to register.

## Salvage Schedule Set For Saturdays

Salvage yard schedule for the next four Saturdays at GD/Convair and GD/Astro sites is:

GD/Astro—Sept. 21, Oct. 5.

GD/Convair—Sept. 28, Oct. 12.

## Naval Reserve Classes Begin

Naval Reserve officers among General Dynamics employees in the San Diego area have two remaining opportunities to enroll in Naval Reserve Officers' School (NROS 11-1) for the fall term.

New students will be accepted at sessions at 7:30 p.m. tomorrow (Sept. 19) and Sept. 26 at Naval Reserve Training Center, Harbor Dr. and Lowell, and at other county locations.

R. A. Evans, manager of personnel administration at GD/Astronautics, a reserve commander, is the school's executive officer, and six other General Dynamics men fill instructors' billets.

John H. Johnson (LCdr., US-NR), GD/Astro director of management systems, will teach a course in industrial management; Harry S. McCool (Lt.), GD/Astro Dept. 140-1, will teach anti-submarine warfare (ASW); and George T. Schnurer (Lt.), of General Atomic, will instruct ABC warfare defense.

R. G. Stoklosa (LCdr.) of GD/Astro Dept. 662-7, will handle guided missile orientation, and Emory W. Thurston (LCdr.) of Dept. 130-3 will teach leadership. R. G. Wilson (Cdr.) of Dept. 196-0 also instructs.

Courses in a dozen subjects will be offered at the San Diego location with other classes meeting at Palomar College, San Marcos (Tuesdays); Grossmont High School (Wednesdays); Hilltop High School (Wednesdays); Coronado Amphibious Base (Thursdays).

Additional information on the NROS program is available from USNRTC, 222-6411, ext. 387.

## Game Contest Runs to Dec.

Big game hunters from General Dynamics will be shooting for big prizes in CRA-ARA Gun Club's annual contest which opens this week and runs until December.

All GD/Convair, GD/Electronics, and GD/Astro people and their families are urged to enter their big game on forms now available at all employee services and industrial relations outlets.

Any type of larger game animals bagged makes the entry eligible in the drawing to climax the contest at the December Gun Club meeting at Gillespie Field.

First prize winner will get a 4 hp air-cooled outboard motor. Runner-up will receive a tape recorder. CRA Commissioner Jack Swank said that there will be a variety of other prizes, depending on number of entries.

## DYNAMICS DRIVERS ENTERED IN RACES

A GD/Electronics man will be vying for top spot in the coming National Inboard Championships which will draw a field of expert racers from all over the country to San Diego this weekend.

Paul Bequette, GD/E production engineer, who holds national highpoint standing in his class, will be racing his 145-cubic-inch hydroplane all three days of the regatta, Sept. 20-22, over the Mission Bay course. His hydroplane is designated by the number 2S.

Also entered in the same class is George Shields of Astro. His boat is No. 22S.

Sponsoring the event is the American Power Boat Association, of which the Pacific Power Boat Club is affiliated. Local contestants are members of the club with Bill Hessing, also of GD/E, commodore.

## CRA Stamp Club's Meetings Resumed

CRA Stamp Club will resume its monthly meetings next month after the summer vacation period, reports Commissioner Jack Benedict.

Members will meet Thursday (Oct. 3) at 7:30 p.m. in the Convair executive dining room.

## First Ground School Session Will Be Tomorrow at Lindbergh

First session of the CRA-sponsored ground school course will be tomorrow night (Sept. 19) at 7:30 p.m. at Jim's Air Service, Lindbergh Field.

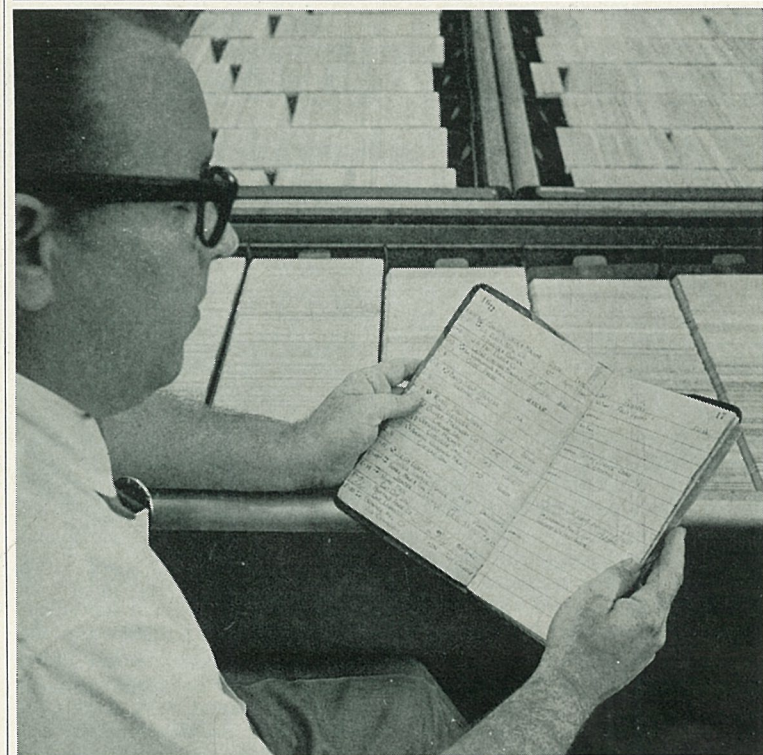
Harold Ayer, president of CRA Solo Flyers which is sponsoring the instruction for all General Dynamics would-be pilots, said that tomorrow's meeting will be for organization and orientation. First actual class will be next week, Sept. 26.

All persons already signed for the course which will prepare students for private pilot's licenses are urged to attend. Others may still enroll by attending the initial session.

Jim's Air Service at 2440 Stillwater Road, north end of Lindbergh Field, may be reached by turning off of Harbor Drive onto Winship Lane.

A professional ground school instructor, Ian Lansdown, has been engaged to teach the 14-week course which covers physical requirements, student permits, pre-flight checks, traffic patterns, theory of flight, navigation, meteorology. At completion, students should be prepared to pass their FAA examinations for private pilot's licenses.

Ayer will give additional information if he is contacted through ext. 2678, Plant 1.



**OLD AND NEW** — Jack Montgomery of GD/Convair facilities control holds 1935 ledger listing company equipment with present recording system of some 100,000 tab cards stretching into background.

## Aging Ledger, Legacy of Past, Holds History of Machinery

A battered little grey ledger, held together with yellowed scotch tape, itemizing all Consolidated Aircraft equipment brought to San Diego in the 1935 move, still plays an important part in GD/Convair's control of capital equipment items.

Since the first hand-printed listing of the 900 pieces of machinery, tools, desks, chairs, typewriters moved from Buffalo, N. Y., at least 140,000 separate items of equipment have been acquired and tabulated, said Jack Montgomery, facilities control analyst in charge of maintaining location records.

Every piece of equipment belonging to the company has its own personal record—ID number, make, model, serial number, description of attachments and accessories—and most important of all, just where it is and what department is using it at any given time.

Whenever department or function numbers are changed or sections relocated, new records must be made for each item. And, when equipment is no longer needed and sent to salvage, sold or discarded, departments must be relieved of their responsibility and records changed.

A continuing audit is made by property accounting to see that all equipment is where it is supposed to be and that correct information is available at all times for adjustment of records.

Even history of the first items listed in the old 1935 "Machinery Records" ledger can be traced through the years. For instance, item E-365, a slip roll former, purchased in 1927, is now charged to Dept. 131 for use at the seaplane ramp. An arbor press, acquired in 1925, bearing the number E-567, is used by Dept. 14 at Rose Canyon. Another arbor press of the same vintage went with the four freight carloads and one vanload of equipment to Electro Dynamic to re-

place burned out equipment.

No. E-1, first entry in the ledger, was a grinder and buffer, disposed of some years ago.

Until 1955, when the IBM tab card system was put into effect, all records were manually posted in ledgers. Now cards are key punched within the facilities control section from information on acquisition reports, tagger reports, data sheets from property accounting.

A conversion to tape is planned this fall. Then, data processing will produce updated monthly listings, combining property accounting and facilities control records. The tab sheets will replace the IBM card file for easier maintenance of records.

## Instrument Society To Meet Tomorrow

First fall meeting of the San Diego Section of the Instrument Society of America will be tomorrow (Sept. 19) at the U.S. Grant Hotel.

General Dynamics members will hear Dr. David C. Kalbfell, president of Instruments, Inc., talk on "Magnetic Amplifiers." Dr. Kalbfell is founder of the firm known as Kin-Tel and a lecturer in physics at San Diego State College.

W. R. Holmes of GD/Convair's standards laboratory will chair the meeting as new president of the San Diego Section. Other GD men on the executive board are Martin Kantor of General Atomic; Charles Hill, Leon Schenke, and Harry Norton, all of GD/Astro; and Dick Barnett of GD/Electronics.

For reservations for the 7 p.m. dinner meeting in the Georgian Room call 298-8331, ext. 23. Social hour will be at 6:30 in the Parisian Room.



## Sports & Recreation



**KEG MODEL** — Pearl Weickersheimmer (Dept. 642) models new ARA bowling shirts now available for winter plant leagues. Individual's name, ARA and team name appear in brown on beige shirt. ARA plans to subsidize half of total cost (\$7.30) on team basis. Team captains of all ARA leagues have order forms.

### Standard ARA Bowling Shirts Now Available on Team Basis

Astronautics Recreation Association will subsidize one-half the cost of bowling shirts for participants in its many plant bowling leagues this winter.

Subsidy will apply on a team basis only. That is, all members of a team must agree to buy shirts before subsidy is available.

An ARA bowling committee selected a shirt for all approved ARA leagues and arrangements were completed to procure the shirt in volume lots, thus reducing the overall cost.

### Ball Team Finishes Season in 2nd Spot

Last year's city champions, ARA's baseball team ended summer league play this year in second place, topped by a Ryan squad. Season's tally for Astro showed 14 wins, seven losses.

The 10-team city league was split into two divisions this year, with Astro capturing "B" division championship. Ryan held top spot in "A" division, and edged the ARA squad in a play-off.

Leading Astro hitters were Charles Johnson (.398), Garfield Winters (.340), and Bill Murphy (.328), while the Murillo brothers, Larry and Hilbert, shared pitching chores.

Other team members were Jim Gorden and Dennis Allison in the field, Bob Hayes, Herb Cormier, Ron Dixon, Sonny Morper, Dave Walden, Mike Smith, Tim Wilber, Art Cunningham, Dick Shaffer, and ARA Commissioner Bud Meham.

### Pistol Club to Fire Over Police Range

Next ARA Pistol Club matches will be fired beginning at 9:15 a.m., Sept. 28 at San Diego Police Pistol Range, Home Ave. and Federal Blvd.

In final August contests, J. S. Knutson placed first in two matches, firing 288 in .22 Camp Perry Police Course master class over Harry Black's 286, and topping Warren Ranscht's 260 with a 264 in a center fire Short National.

Expert class in the Camp Perry round was won by Bill Dittman with 288, seconded by Ranscht's 281, and Byron Clapper topped Bill Worthington 262-251 in sharpshooter class.

### Help Wanted For Work on ARA Railroad

**HELP WANTED:** Fantastic "employment" opportunities with ARA Railroad Company now exist for skilled and unskilled workers.

Job offers good hours (every Saturday, 8 a.m. until you feel like stopping) and good pay: hours apply toward ARA Effie Awards, and participants receive free lunch and liquid refreshments, as well as the biggest rewards in the business in terms of personal satisfaction.

Needed immediately (Saturday, Sept. 21) are carpenters (skilled and unskilled), "gandy dancers," tie cutters, surveyors; with future openings expected for experienced machinists, sheet metal workers, hydraulic and electrical designers.

The project is aimed at providing ARA with its own quarter-scale miniature railroad on which GD/Astro employees and members of their families can take excursion rides around the recreation area.

Carpenters are needed to help frame the railroad's engine house, for which the foundation has already been poured. Gandy dancers will help lay track along the pre-graded roadbed.

Machinists, sheet metal experts and design engineers are already at work turning out parts for the "diesel" locomotive which will tow the passenger cars. And more of this work is in the offing as designs are firmed.

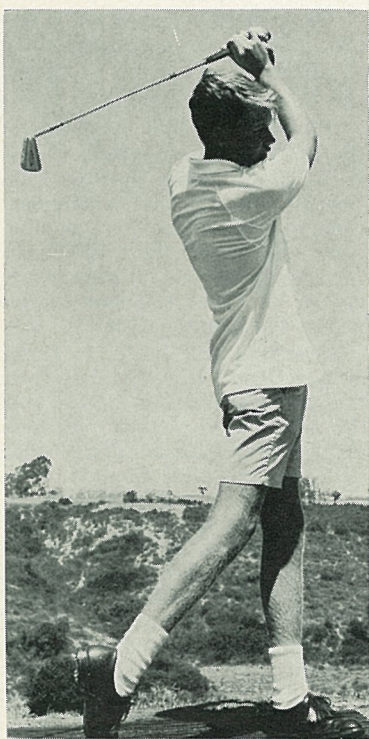
Volunteers who leave their names with ARA Headquarters, ext. 1111, will be contacted and supplied additional information, or ARA Commissioner Marty Stutz will welcome them at the ARA Area any Saturday morning.

The Railroad Company "board of directors" holds regular planning sessions on Tuesdays, 7:30 p.m. in ARA Clubhouse, open to all GD/Astro railfans and others interested in the project.

### Inter-Division Golf Matches Planned

Golf teams from General Atomic, GD/Pomona and GD/Astro will vie Oct. 13 at Carlton Oaks, with selection of the ARA squad to be made from among ARA Golf Club members.

Candidates have been asked to contact Joyce, ext. 1111, between Sept. 23 and Oct. 4. Final team selection will be based on participation in monthly Golf Club tournaments.



**CLOSE WIN** — Logan B. Jenkins, 15, son of General Dynamics NEWS editor Logan H. Jenkins, last month won San Diego County Junior Medal Play Golf Championship after finishing 72 holes tied at 285 (three under par for Balboa Park course) with John Schroeder, 17, son of GD/Astro's Ted Schroeder. Young Jenkins won with birdie on second extra hole of playoff.



**VARSITY** — Astro softball team is completing successful season of league and tournament play. Standing, from left, are Bob Lange, player-manager, Norm Dahl, Bob Hayes, Roy Neie, Van Jackson, Garfield Winters, Fulton Smith, and Forest Erwin, ARA commissioner and coach. Kneeling, from left, are Dick Leslie, Curt James, Mike Menko, Ken Crotz, Carroll Bower. Not shown, Frank White, Dick Fenton. — Photo Keith Adams.

### Astro Softball Entry Nosed Out In Southern California Finals

Astro softball team lost its last game of the season—but it took a Riverside team 11 innings to do it (1-0) in the finals of the Southern California Municipal Athletic Federation tourney ("A" division) in Los Angeles.

Astro represented San Diego County in the meet, earning the honor with two wins over El Cajon Hawks, 5-2 and 1-0, locally, and then downing a Burbank team 3-0 in an early tournament round.

The team was also runner-up in the San Diego district ASA tourney, losing a 2-0 match with Tamale Kings, after 1-0 victories over Linda Vista Cafe and El Cajon Hawks.

Roy Neie turned in consistent performances on the mound throughout the season, with occasional assists from Bobby Lange,

player-manager. Curt James led the group's offense, with late season clutch-hitting triumphs from Dick Leslie, Garfield Winters, Ken Crotz and Neie.

Astro's defense featured Norman Dahl, catcher, Frank White and Fulton Smith, infielders, and outfielders Dick Fenton, Van Jackson and Mike Menko.

### Water Skiers End Season

ARA Water Ski Club marked the close of its "official" season Labor Day with the annual trophy contest, but is continuing an active program of instruction, ski trips and competition.

Receiving trophies for performances turned in at the Labor Day fete were Jim Carter, Eddie Kirkeby and Tibor Lody, ranking first, second and third respectively among male contestants, and Elsie Christopher, Betty Fleming and Dottie Blomke among the women.

On Sept. 22 the group will hold a picnic at Santa Clara Point, Mission Bay, and then Oct. 18-20 will travel to Blythe for skiing. The Blythe trip is a repeat of an earlier highly successful excursion.

Stan Stein, Dept. 576-4, has been named publicity chairman for the club. He has invited GD/Astro employees to investigate the group's programs of instruction at all levels, and Wednesday evening skiing parties by calling Commissioner Roy Kirkeby, 278-4040.

### Golfers to Compete Over Carlton Oaks

Entries will be accepted at ARA Headquarters, ext. 1111, between Sept. 30 and Oct. 9 for ARA Golf Club's next tournament to be played at Carlton Oaks Oct. 12 and 13.

Finals in recently completed ARA Twilight Golf series found Phil Swanson and Ron Bruck, winners of the Thursday Alpha league, in top spot following a nine-hole play-off.

Bill Ruzich and Sandy White, Tuesday Beta winners, came in second; "Bugs" Moran and Mort Smith (Tuesday Alpha), third; and Sam Richter, Chuck Adkison and B. Hovey (Thursday Beta), fourth.

### Battle With Marlin Takes Bores 2½ Hrs.

When GD/Astro's Joe Bores, Dept. 986-3, went marlin fishing Labor Day with John Zamiska, Dept. 671-1, he wanted to set a record.

Joe got his marlin—his first—and it tipped the scale at 127½ lbs., 98 inches long. Not record size, but it was a fighter. Joe feels the 2½-hour battle—hooked at 1 p.m., gaffed at 3:35—must qualify for somebody's "little black book."

### ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**CARD PARTY**—Benefit party Oct. 11, 8 p.m., ARA Clubhouse. Donation, \$1.

**COMMODITIES**—Study group forming at meeting Sept. 24, 7:30 p.m., ARA Clubhouse.

**DANCE** — Halloween costume ball Oct. 19, El Cortez Hotel. Tickets 75 cents per person at employee services outlets.

**DISCOUNT TICKETS**—"Cleopatra," Sept. 29, Capri Theater, 20 per cent off on tickets through employee services outlets.

**GOLF** — Monthly tournament Oct. 12-13 at Carlton Oaks. Enter with ARA Headquarters, ext. 1111.

**PHYSICAL CULTURE**—Meeting Sept. 23, 7:30 p.m., ARA Clubhouse.

**PISTOL** — Matches Sept. 28, 9:15 a. m., San Diego Police Pistol Range, Home Ave. and Federal Blvd.

**RADIO CLUB** — Meeting at 7:30 p.m., Sept. 25 features DXpedition to Palmyra Island by J. J. Carr. Slides, films, refreshments.

**ROCKHOUNDS** — Del Mar "Gemboree," Sept. 21-22. Admission 50 cents.

**SAILING** — Instruction for members. Call Dick Moyer, ext. 4681, Plant 71.

**SCULPTURE** — Class forming under Francis Pall, with meeting Sept. 23, 7:30 p.m., ARA Clubhouse.

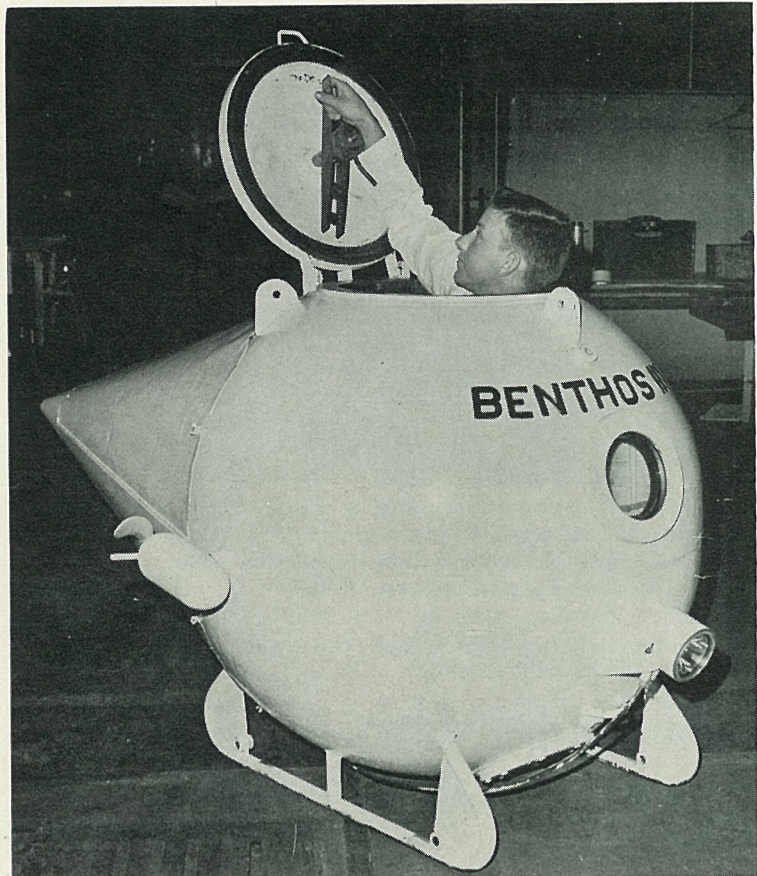
**SELF-IMPROVEMENT**—New class starting at Powers Studio, 426 B St., Sept. 24. Call 234-7263 to register. Cost is \$25 per person.

**SNOW SKI CLUB** — Meeting 7:30 p.m., Oct. 2, ARA Clubhouse.

**SQUARE DANCE**—Beginner's class open for final time Sept. 24, 8 p.m., ARA Clubhouse. Series (22-24 lessons) readies students for Astro Nauts membership. Cost, 50 cents per session.

**WATER SKI**—Activities continue with trips, parties planned. Contact Roy Kirkeby, 278-4040.





**ONE-MAN JOB** — Midget submarine was acquired recently by Electric Boat division for research work. Inspecting device is EB's Ray Grady, test technician. It is powered by two battery-driven electric motors. Craft will dive to 300 feet, has speed of three knots.

## Gen. Power Recommends More Hustlers For AF

Gen. Thomas S. Power has called the B-58 "one of the finest weapon systems in the world today" and said he would "like to see it put back in production."

The commander of Strategic Air Command made the statement in testimony before the Preparedness Investigating Subcommittee of the Committee on Armed Services in Washington, Aug. 19, and later made public by the committee.

General Power said he had submitted suggestions "down through the whole spectrum" concerning manned bombers.

"I have particularly asked for B-58s," the SAC commander said. "We have had it in the inventory for three years. We have had problems . . . but it was a big step forward in performance."

"We have more than doubled the speed of our bombers. We bought and paid for it and had three years of struggling to make it reliable. It is a reliable weapon system today, and I would like to see it put back into production."

"We have already bought and paid for the tools and all the know-how. We will have a proven weapon system. We can get that within two years," General Power testified.

The B-58 had its first flight Nov. 11, 1956, and became operational Aug. 1, 1960.

Today, two wings of Mach 2

Hustlers form the core of SAC's supersonic nuclear retaliatory prowess. They are the 43rd Bomb Wing at Carswell AFB, Fort Worth, and the 305th Bomb Wing at Bunker Hill AFB, Peru, Ind.

As the free world's only operational double sonic bomber, the B-58 has posted 14 world speed and performance records. In the process, B-58 crews have earned virtually every major aviation award, including: Thompson Trophy, Mackay Trophy (twice), Harmon Trophy, Bendix Trophy, and Bleriot Trophy.

On Oct. 26, 1962, Air Force accepted the final production B-58 to come off the assembly line. All combat Hustlers are now being cycled through a modernization program to bring them up to latest configuration.

## Division Communicators Will Confer on Costs

General Dynamics communications experts from various divisions will meet in New York City next week to consider methods of reducing wire communications costs throughout the entire Corporation.

Roger Lewis, General Dynamics president, will open the meeting.

R. E. Bennis, Corporate telephone and wire coordinator, said,

## Radio Contract For F-111 Let

Collins Radio Co. has been awarded contracts for development and production of high frequency radio equipment and antenna couplers for the F-111 tactical fighter for both the Air Force and the Navy.

The contracts, totaling about \$2.3 million, are for development and initial production of 23 units. General Dynamics contract calls for 23 test aircraft.

Collins HF radios will provide long-range, "highly reliable" communication. The antenna couplers will permit automatic loading and tuning of antennas.

Top speed of the bi-service plane will be about two-and-one-half times the speed of sound. It is to be used as a long-endurance, and low-altitude weapon system (capable of flying anywhere in the world in one day) as well as a low-level penetration fighter.

Versatility of the F-111 is embodied in its variable-sweep wing, which will extend and retract during different phases of flight. This will provide maximum effectiveness throughout the speed range of the fighter. Short take-off and landing from rough airfields and carrier decks are added features.

\* \* \*

### BENDIX TO BUILD F-111 ACTUATORS

A contract to design, develop and manufacture the primary flight surface control servo actuators for the F-111 jet aircraft has been awarded to Bendix-Pacific division of Bendix Corp.

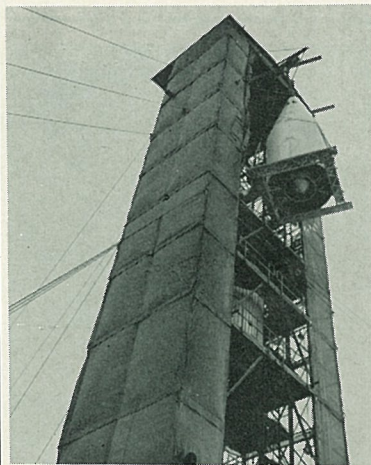
The contract, totaling \$750,000, covers development of lightweight integrally packaged tandem actuators and valves to provide actuation and control of the rudder and horizontal tail flight surfaces for both the Air Force and Navy test versions of the aircraft.

David H. Brown, general manager of Bendix-Pacific, said the horizontal tail servo actuators will provide an output of force equal to 70 tons but will require only two ounces of input force to activate them.

Bendix-Pacific has been a major supplier on another of GD/Fort Worth programs, having supplied more than \$20 million in hydraulic control systems for B-58 jet bomber.

## Orbiting Observatory Mockup Checks Units

Milestone in NASA's Orbiting Astronomical Observatory (OAO) program was reached last week



**GOING UP** — OAO mockup nears top of Pt. Loma tower at San Diego, watched by GD/Astro men, Harold Schnaubelt, Paul Blair, Charles Shelton and Joe Kayda.

with erection of a spacecraft mockup with actual nose fairing, second stage and interstage adapter at GD/Astronautics' Point Loma Test site.

Ultimately, OAO will be launched from Cape Canaveral aboard an Atlas-Agena B combination into a 550-mile high circular orbit about the earth. After jettisoning its nose fairing, the unmanned spacecraft will make telescopic stellar observations, reporting with digital data and television signals.

The Pt. Loma erection marks the start of a three-phase test program. First come match-mate tests to check compatibility of various portions of the space vehicle, with additional testing to follow after erection of the Atlas booster (first stage).

Dominating the scene during erection was the all-fiber glass, honeycomb nose fairing built by GD/Fort Worth (General Dynamics NEWS, June 12, 1963). This three-story tall cone will protect OAO during ascent.

GD/Astro supplies the Atlas space launch vehicle first stage; Lockheed the Agena B second stage; while the spacecraft itself is built by Grumman.

For operations at Pt. Loma, GD/Astro's Dewey Jones, Dept. 565, is test conductor; Phil Adams, Dept. 565, is test engineer; and engineering support is provided by Dept. 756 personnel directed by Foreman Les Green.

## Crack F-102, F-106 Teams To Compete in Combat

Ten of the 14 crack Air Force teams from air defense fighter-interceptor squadrons shooting for top places in William Tell 1963 next month will be flying General Dynamics/Convair fighter interceptors.

Four of the teams, all representing Air Defense Command squadrons, will fly Convair F-106s at the week-long AF World-Wide Fighter Interceptor Weapons Meet starting Oct. 7 at Tyndall AFB, Fla. Six teams will fly F-102s.

The competition is usually held every two years to demonstrate the Air Force fighter-interceptor units as part of the Free World deterrent posture. Planes are placed in three classes according to weapons used. F-102s will compete in Category II; F-106s in Category III. Only other fighter craft entered in the meet are McDonnell F-101Bs in Category I.

F-102 teams have been selected from the 4th FIS, Misawa Air Base, Japan, with Lt. Col. Arnold E. Hector, PACAF, team captain; 59th FIS, Goose Air Base, Labrador, Col. Edward R. Haydon, ADC; 146th FIS, Pittsburgh Municipal Airport, Maj. George C. McRory, Air National Guard; 317th FIS, Elmendorf AFB, Alaska, Lt. Col. Joseph W. Rogers, Alaskan Air Command; 460th FIS, Portland International Airport, Ore., Lt. Col. William W. Maitland, ADC; and 525th FIS, Bitburg Air Base, Germany, Lt. Col. William C. Jackson, USAF.

F-106 teams and team captains are from 11th FIS, Duluth Municipal Airport, Minn., Lt. Col. L. W. Kupersmith, 30th Air Division, Trux Field, Wis.;

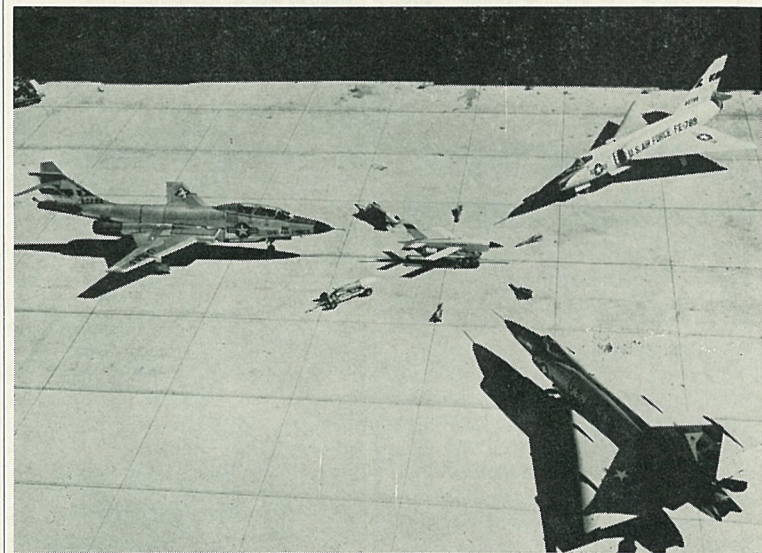
48th FIS, Langley AFB, Va., Lt. Col. Jimmy J. Jumper, 26th Air Div., Hancock Field, N.Y.; 318th FIS, McChord AFB, Wash., Lt. Col. Howard S. Askerson, 25th Air Div., McChord AFB; and 456th FIS, Castle AFB, Calif., Lt. Col. John H. Rogers, 28th Air Div., Hamilton AFB, Calif.

Teams will fly missions simulating, as closely as possible, aircraft attack conditions. Using the Hughes Falcon missiles and Douglas Genie rockets, teams will fire at the fast-flying Ryan Firebee Q-2C jet drone target, only one-half the size of the interceptors.

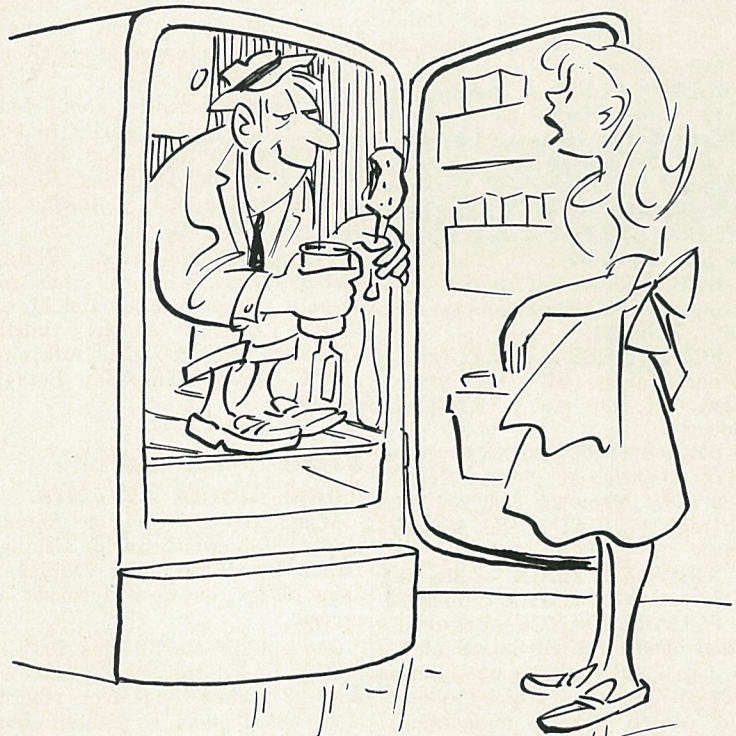
Crews will scramble for their aircraft only after their radar controllers have detected the tiny jet drone flying over the Gulf of Mexico firing range. Teams will be graded on their ability to shoot down the drone at altitudes above 50,000 feet, below 50,000 feet, and on night missions.

This year's competition will feature an intruder mission. The radar controller for the team will be notified that somewhere over the Gulf a drone is coming in. He will have to locate that target on his radar, scramble his interceptor team, and direct them for the "kill."

F-102s first took active part in the weapon meets in 1958 and F-106s for the first time in 1961. In that William Tell competition, pilots from 59th FIS, Goose Bay, scored four perfect 1,000-point missions in F-102 category.



**WILLIAM TELL WEAPONS** — Convair F-106 and F-102, center and right, and McDonnell F-101B (at left) are pictured pointing toward a Ryan Q-2C jet target drone, simulated enemy in coming Air Force World-Wide Fighter Interceptor Weapons Meet. Air-to-air missiles and rockets carried by craft are clustered around drone.



"Oh, THERE you are! How long have you been home?"

### GD/FW Health Physics Exhibit on Display

A GD/Fort Worth-sponsored photo-panel depicting the function of health physics is featured in the 1963 Tarrant County Medical Society Health Fair at Will Rogers Coliseum this week.





**HEAD TABLE**—Frank Davis, GD/Fort Worth president, spoke to full house at recent GD/Astro Management Club meeting, which featured guests from other divisions. From left: T. F. McCubbin, representing E. D. Bryant, GD/Astro vp-operations; E. G. Hill, GD/Astro controller; W. T. Lake, General Dynamics comptroller; J. L. Lombardo, GE/Electronics-SD general manager; W. H. Patterson, GD/Astro vp-advanced product planning; R. T. Bauman, Astro Management Club president; Davis; W. L. Van Horn, GD/Astro vp and program director-Atlas weapons system; H. Cushman Dow, GD/Astro chief counsel; J. R. Dempsey, GD/Astro president; Dick Wilkens, GD/Convair director of industrial relations; G. L. Hansen, GD/Astro vp and program director-Centaur; E. V. Russell, past president, Astro Management Club.

## Rapt Audience Hears Davis Discuss F-111

"If a fellow catches a big fish, he doesn't walk home through the alley."

Thus, Frank W. Davis, General Dynamics/Fort Worth president, explained the topic of his address ("Airplanes — Texas Style") at a meeting of GD/Astronautics Management Club in San Diego recently.

Davis referred, of course, to GD/FW's hard-won contest for the controversial F-111 (TFX) fighter-bomber contract, awarded to the Texas division last November.

It was, Davis noted, "a helluva competition."

The contest was unique because decision for the bi-service F-111 award had to be made at Department of Defense level, and further, since the competition continued into three "sudden-death" play-offs.

"I believe this resulted in a better airplane," Davis said, adding that, "It's pretty hard on the competitors, but I believe we'll see more of this in the future."

Davis traced the history of the division he heads in terms of its aircraft—all of them controversial in early stages of development.

He called the B-36 (mammoth intercontinental bomber which experts of the day termed "impossible to build") the airplane which put GD/FW "on its own two feet."

The B-58 Hustler—now one of the world's most honored aircraft—came next. It too, Davis said, was controversial, with experts predicting it would miss its calculated altitude, speed and performance by up to 30 per cent.

"It didn't," he noted. "And significantly, it put GD/FW in the business of designing a complete weapon system: experience of immeasurable aid in the F-111 competition."

(Tremendous B-58 capabilities and the honors heaped upon the plane were illustrated in an in-house premiere showing of the film "Champion of Champions" narrated by Jimmy Stewart.)

Moving to the subject of F-111, Davis pointed out that the variable-wing aircraft has now had some 9,000-hours of wind-tunnel testing—twice as much as the B-58 (at that time, the world's most meticulously designed airplane) had at its maiden flight.

He said the program now involved some 6,500 people working at Fort Worth, GD/Convair, Can-

adair Ltd., GD/Electronics, Grumman, McDonnell and 16 other subcontractors. In addition, separate programs are under way on a fan after-burning engine for the plane, and a complete missile system is being built by Hughes for the Navy version.

At this point, the Development Engineering Inspection (mock-up) has been completed a full week ahead of schedule.

Davis also commented on the lengthy investigation which has enveloped the F-111 program since its award:

"In a contract of this size, it (the investigation) was not unexpected," he said. "And from it we've learned many things we might not otherwise have known."

"We learned, for example, that GD/FW won the technical evaluation on every round of the competition. We also learned that the Secretary of Defense and the Secretaries of the Air Force and Navy looked beyond the recommendations they received from below: a difficult and courageous thing to do, and they did it."

He joked, "Our ambition now at GD/FW is to fly the F-111 before they finish the investigation."

Davis' San Diego appearance (Continued on Page 2)

## Curtis to Take Corp. Position

M. C. Curtis, formerly director of engineering at General Dynamics/Convair, has been appointed Corporate director of program analysis and evaluation, reporting to R. M. Hatcher, director of operations service for General Dynamics.



Coincidentally, William W. Fox, a former chief engineer at GD/Convair, is returning to the division as director of engineering, reporting to C. W. Frick, vice president-engineering. Fox has been a consultant since leaving Convair in 1961.

Curtis attended San Diego State College and graduated from Northern Illinois College, Chicago, Ill., with a B.S. in physics. He served in the Marine Corps from 1941 to 1946 and joined Convair as a technical analyst in 1951. Recalled to active military duty in 1952, he saw action in Korea as a helicopter pilot and returned to Convair in 1954 as flight test engineer and was appointed chief administrative engineer in 1961 and director of engineering in June, 1963.

## New 'Proposal Development' Function Aimed at Response to Customer Needs

Formation of a proposal development function within GD/Astronautics' advanced product planning department resulted last week in new assignments for two division executives.

The new function will be



headed by C. R. Walker as manager of proposal development, reporting to W. H. Patterson, vice president — advanced product planning. The group is charged with directing efforts to develop

proposals responsive to customer requests.

Moving to Walker's previous post as manager of division systems is J. M. Hanley, formerly assistant to the vice president—administration. In his new assignment, Hanley reports to J. H. Johnson, director of management systems.

Hanley is a graduate of Union College, New York, and Chicago Law School. In addition to private legal practice, he served as both state's attorney and assistant attorney general of North Dakota. He attained the rank of full colonel during Army service, 1941-1960, and served for eight years with the Armed Services Board of Contract Appeals in Washington and Tokyo.

Previous GD/Astro assignments have found Hanley as material contract adviser and manager of material contracts and (Continued on Page 2)

# Weight Saving Ideas Sought to Boost Payload

A pound off Centaur on the ground means another pound to the moon!

General Dynamics/Astronautics is accentuating this version of one of the simple axioms of space travel—decrease the booster weight; increase the payload—in a current effort centering within the Centaur project organization.

The implication is simple—for each pound trimmed off Centaur before it leaves the launch pad, another pound can be added to the payload destined to land on the moon.

Grant L. Hansen, vice president and Centaur program director, explained the present attention to weights after outlining the tasks that lie ahead for Centaur.

Hansen pointed out that Centaur is slated for a series (seven planned) of additional research and development flights, the first to occur later this year. These flights will prove the vehicle's capability as a space vehicle of a new breed—powered by high energy fuel combinations (liquid hydrogen—liquid oxygen). Following these flights Centaur will tackle the primary mission now scheduled for it—the boosting of a Surveyor spacecraft on the journey to the moon.

Through the instruments it carries, Surveyor will make an extensive exploration of the lunar surface and investigate conditions on the moon.

"This is a basic step necessary before manned spacecraft can be sent to the moon," Hansen said.

"Every additional pound of instruments we can pack aboard Surveyor means a greater input of knowledge," he added. "And it could mean a shorter time span between unmanned and manned explorations, an equally important consideration."

National Aeronautics and Space Administration (NASA) has asked all industries and agencies involved in the program to investigate thoroughly all possibilities for increasing the Surveyor payload. Astronautics takes an active part in all elements of the program and has concentrated on reducing Centaur weights since the inception of the program.

In addition, Astronautics is going all out to reduce the weight of the Atlas launch vehicle which is the first stage booster for Centaur.

Thus, weight reduction is not new at Astro. In fact, 24 separate proposals have been investigated (Continued on Page 2)

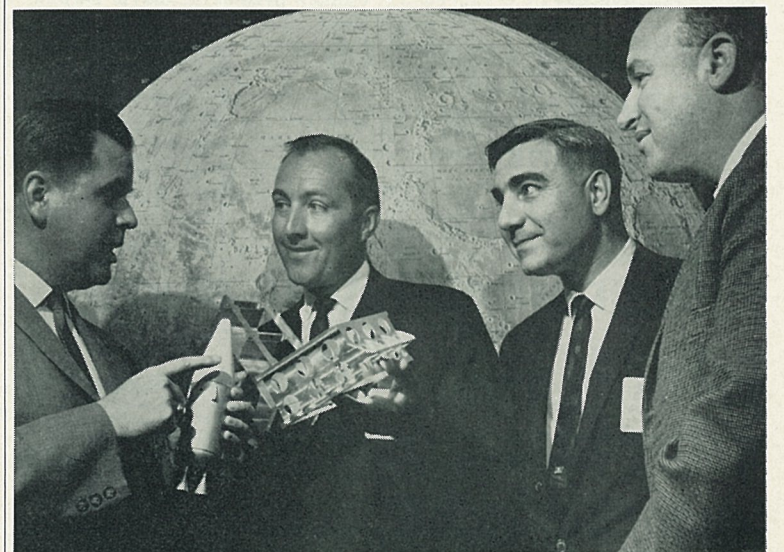


**RECOGNITION** — Algie A. Hendrix, General Dynamics vice president-industrial relations, holds plaque honoring participation of Dynamics employees in U.S. Savings Bonds buying by payroll deduction.

## Dynamics' Bond Buying Praised

General Dynamics Corporation has received a U. S. Department of the Treasury "award for outstanding achievement" in connection with this year's U. S. Savings Bonds campaign throughout the Corporation.

Algie A. Hendrix, Corporate vice president-industrial relations, accepted the award for Roger Lewis, president, in behalf of all General Dynamics employees who are regular purchasers (Continued on Page 2)



**POUNDS AWAY** — Redesigned assembly which saved weight, Centaur model and lunar background are symbolic of current GD/Astro effort to reduce Centaur weight, increase payload to moon. Ringleaders, from left, are Grant Hansen, vice president and program director; E. W. Koester, weights group; Karl Kachigan, chief engineer—analysis and development, and Ronald Rovenger, NASA field manager at Astro.





**LONG SERVICE**—George Wilson, left, Air Force resident auditor at GD/Astronautics, was recently honored for 30 years of civil service work. Henry A. Wallace, Western District director for the USAF auditor general, presented service pin and certificate. Wilson has served at Astro since 1957.

## Log Book Entries



John L. Pettit, GD/Astro Dept. 250-2, recently received his 25-year service emblem from President J. R. Dempsey.



Travis L. Maloy, left, Dept. 680-0, and Julius H. Powell, Dept. 143-2, recently received 25-year pins at GD/Astronautics.

## Papers Presented

**BABITS**—V. A., Dept. 592-0, "Infrared television pickup tube," Electronics Magazine, September issue.

**GOODING**—T. J., Dept. 596-7, "Experimental study of a co-axial plasma gun for space propulsion," British Institute of Physics meeting on Plasma Physics, London, Sept. 22.

**KUGLER**—G. L., Dept. 564-4, with SCHUETT, R. S., "Dynamic testing techniques for a wind tunnel model," Aerospace Symposium on Aeroelastic and Dynamic Modeling Technology, Sept. 23-25.

**WOOSTER**—T. M., Dept. 577-7, Panelist: "State of the art of measuring and control systems," ISA Instrument-Automation Conference and Exhibit, Chicago, Sept. 10-12.

**WRENCH**—E. H., Dept. 033-2, "Implementation of Vertistate, a gravity gradient attitude control system for satellites," International Astronautical Congress, Paris, Sept. 26.

The following GD/Astro personnel presented papers at the SAE National Aeronautics and Space Engineering meeting, Los Angeles, Sept. 23-27:

**BURNETT**—J., with TANIGUCHI, Take, both Dept. 380-2, "Make experience data work for you."

**FOOR**—E. R., Dept. 290-4, "Distortion control during fabrication of large boosters."

**GARRISON**—J. M., Dept. 662-4, "The heart and soul of a development program."

**GILBEAU**—J. J., Dept. 961-7, "Ground handling systems for liquid hydrogen."

**KING**—K. M., Dept. 503-0, "Water touchdown with retro-thrust."

**LOWRY**—J. K., Dept. 592-3, "A specialized toroidal pressure vessel."

**NORDBY**—F., Dept. 652-4, "Preparation for lunar environment with a means of varying gravitational environment."

**WU**—Dr. W. L., Dept. 594-3, with YAKUT, M. M., Dept. 594-7, "Biologicals of manned orbital space stations."

## Deaths

**CARRIER**—George Joseph, Dept. 756-0, Died Sept. 18. Survived by wife Kathryn, two adult sons.

## General Dynamics NEWS

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## Weight Saving Ideas Sought to Boost Payload

(Continued from Page 1)

and incorporated into Centaur's design to date. They represent a combined saving of more than 463 pounds.

However, most weight reduction in the past has been confined to the Centaur weight control and design groups. Now the help of all employees, regardless of their job, is being solicited.

In short, anyone with a weight-saving idea is urged to speak up! E. W. Koester of the weight control group explained that ideas need not be confined to savings of hundreds of pounds. Actually, every pound and ounce that can be trimmed off Centaur is important. And all suggestions need not involve intricate assemblies or entire sub-assemblies.

For instance, a 15-pound saving has been attributed to the replacement of potted electrical collectors with rubber-grommited "poke-home" type connectors. The latter eliminated pigtailed and potting, reduced weight and kept spare wires to a minimum. Another 15-pound saving is possible through the replacement of steel bolts (weighing 0.10 lb. each) with titanium bolts (weighing 0.066 lb. each)!

"These ideas sound simple, but they are sound and adaptable," Koester said. "We think many other members of the Centaur team can help, just by calling our attention to possible weight saving ideas."

Employees with ideas may submit them via an "AVO" form or telephone (ext. 4032) to P. S. Vincelett of Dept. 966-8.

While ideas of all types are being sought, employees must realize that each must undergo checks and verification as well as analysis concerning cost and time before it can be adopted. This is possible through Centaur's channels established for processing weight saving ideas.

Why is weight saving so important?

The estimated operational cost per pound of Surveyor scientific instrumentation sold landed on the moon is \$85,000!

## Official Notices

The following utilities at Plant 71 will be shut down between midnight Friday (Oct. 4) and midnight Sunday (Oct. 6):

All air conditioning in Bldg. 4, except that in areas used by telemetry data processing group (TDPG) and data processing; and

All high-temperature water (heating and hot water) in the plant, with exception of that in Bldgs. 5, 27 and 33.

R. D. LEONARD  
Plant Engineering  
General Supervisor

## Personals

### MAIN PLANT

My family and I wish to acknowledge the understanding sympathy expressed by our friends at GD/Astronautics, upon the recent loss of our infant daughter, Pamela Joan.

J. P. Moore III, Dept. 317-0

My sincere thanks to all my GD/Astronautics friends for their kind expressions of sympathy on the recent death of my wife.

Robert Sailer, Dept. 344-3

## Births

### MAIN PLANT

THEILIG—Daughter, Kem Eva, 8 lbs., 6½ oz., born Sept. 6 to Mr. and Mrs. Ken Theilig, Dept. 324-4.

## Saturday Salvage Schedules Noted

Saturday morning schedule for employee sales at GD/Convair and GD/Astro salvage yards for the next four weeks is:

GD/Astro—Oct. 5, 19.

GD/Convair—Oct. 12, 26.

## Rapt Audience Hears Davis Discuss F-111

(Continued from Page 1)

brought the veteran General Dynamics executive back to the site of earlier days in his career. He commented on renewed acquaintance with many old friends from his days as a Vultee Field test pilot and later assignments in the old Convair organization.

"One of General Dynamics' strengths comes from the fact that there is an interchange of people from division to division," he said. "The resulting alloy is stronger than any one division might be by itself."

Quoting Roger Lewis, Dynamics president, Davis emphasized that, "The defense industry has an obligation to the nation to remain strong and viable. We can best insure our survival by insuring that we are flexible and can bring the best resources available to bear on any problem arising anywhere within the Corporation."

Davis was introduced by W. H. Patterson, GD/Astro vice president—advanced product planning, whose department sponsored the meeting.

Introduced from the audience were I. M. Laddon, member of General Dynamics board of directors, and his son.

At the head table were J. R. Dempsey, GD/Astro president, and members of his staff; W. T. Lake, General Dynamics Corporation comptroller; J. L. Lombardo, general manager, GD/Electronics—San Diego; and D. C. Wilkens Jr., director of industrial relations, GD/Convair.

## Treasury Honors GD Bond Buyers

(Continued from Page 1)

of bonds by payroll deduction.

There now are 37,248 General Dynamics men and women buying bonds by the payroll method.

Hendrix expressed the Corporation's pride that so many employees are participating and commended Convair division for having the highest participation with 71 per cent, followed closely by Astronautics with 70 per cent. Hendrix emphasized General Dynamics' continuing interest in stimulating bonds sales and added:

"We encourage each employee to become a regular saver through the payroll deduction plan."

Application forms are available at all divisions and require only a simple signature to put into effect.

The award was presented at a luncheon in New York City.



**HERE'S HOW**—Joe Corrales Jr., right, shows W. J. Stanley, Astro manager of plant engineering, his Employee Suggestion that may save as much as \$14,000 in its first year of use.

## NITROGEN STORAGE IDEA EXPECTED TO SAVE ASTRO \$14,000

Joe Corrales Jr., an architectural draftsman (Dept. 250-2) at General Dynamics/Astronautics, recently received first payment of \$250 for an Employee Suggestion (ES) which may save the company nearly \$14,000 in its first year of use.

Corrales noted that gaseous nitrogen was supplied to missile modification areas and clean room facilities in Plant 19's Bldg. 3 from racks of storage bottles under the dock area and outside the building.

He learned that bottles were changed frequently because of their limited volume, and that considerable gas in each bottle

## Nearly \$10,000 Paid For Employee Ideas

Between May 1 and Sept. 1, hourly employees at GD/Astronautics received nearly \$10,000 for Employee Suggestions which reduce cost of company's operations.

During this period, 106 individual awards ranging from \$10 to \$1,300 were made for a total of \$9,985.54. Four awards were for amounts over \$500.

The ES program and the Cost Improvement Proposal plan for salaried employees are administered by division systems (Dept. 170).

was wasted because each change had to be made before bottle pressure dropped below a certain level.

Corrales' suggestion: locate a nitrogen storage trailer outside Bldg. 3 to replace the bottled gas supply.

Besides saving man hours formerly spent in changing bottles, and eliminating waste, Corrales' ES promised additional savings since nitrogen in bulk could be purchased for less than the "per bottle" price.

GD/Astro's plant engineering installed plumbing connections to put the suggestion into operation, and L. H. Sanders of the Air Force Plant Representative's Office was instrumental in arranging for transfer of an excess nitrogen trailer from Cape Canaveral (AMR).

In addition to the \$250 first payment presented him recently by W. J. Stanley, manager of plant engineering, Corrales can look forward to a second check early next year.

This payment—expected to be about \$1,100—will bring the total award for his ES to 10 per cent of the savings for its first year in use (now estimated at \$13,888).

Liberty means responsibility. That is why so many men dread it.

—George Bernard Shaw

## Billings Heads Tech Services

Realignment of administrative functions to improve operation of GD/Astronautics research, development and engineering department and a new manager-level appointment were announced last month by Mort Rosenbaum, vice president—research, development and engineering.



P. D. Ferrara, chief engineer—administration, now reports to Rosenbaum. Reporting to Ferrara are D. H. McCoy, chief—engineering administrative services, and A. J. Gillette Jr., named chief of planning and estimating, coincident with the new alignment.

Appointed manager of technical services (Dept. 521-0) was T. A. Billings, who reports to W. W. Withee, vice president—engineering.

Reporting to Billings in his new assignment are W. T. Rieff, chief of engineering liaison; R. A. Taylor, chief of materials and parts analysis; M. M. Sherman, chief checker, checking and configuration data control; J. E. Frelinger, specifications; G. R. Shumway, vendor data control; and T. H. Brunner, engineering data documentation practices.

Billings is a native of Provo, Utah, and attended Utah Agricultural College and Ryan School of Aeronautics.

He joined Convair in 1940, and before transfer to the Pomona division in 1954 was supervisor of technical design administration. At Pomona, Billings was chief administrative engineer and later assistant chief engineer, before returning to San Diego in 1958 as chief administrative engineer.

In 1962 he joined GD/Astro and subsequently served as chief of engineering data documentation, and as chief administrative engineer before assuming his current post.

## AFPRO Mgt. Club Meets Oct. 15

All members of the Air Force Plant Representative's Office at Astronautics and their spouses have been invited to attend an Oct. 15 meeting of the AFPRO Management Club.

The event gets under way with a social hour at 5:30 p.m., followed by dinner and an official program in the Kon Tiki Room, Catamaran Hotel.

One of the highlights will be installation of a new slate of officers by Col. M. K. Andresen, AFPR.

They include: H. C. Heil, president; F. D. Boone, vice president; D. E. Moore, treasurer; Mrs. Elinor Brown, secretary; and the following members of the executive committee, H. E. Anderson, C. J. Pemberton, L. W. Jarecky, J. C. Nemec and Capt. W. E. Maull.

The program will feature a special wine tasting session put on by the Almanden Vineyards of Los Gatos.

This is the first official meeting of a new year for the group.

## GD/Astro Sets Up Proposal Function

(Continued from Page 1)

services. Walker is an engineering graduate of Colorado University, and previously served at both Convair and Fort Worth divisions of General Dynamics.

Joining GD/Astro in 1956, he was consecutively research group engineer, senior flight test group engineer, program control administrator, master scheduling manager, and manager of program planning and control.



**SPECIAL  
SUPPLEMENT**

★ ★ ★

**RETAIN  
FOR FUTURE  
REFERENCE**

**Education Plans  
Refund Tuition**

Last year nearly 1,500 GD/Astro employees made use of the Company's tuition refund policy to pursue their education in subjects of mutual benefit to them and to the Company.

To qualify for refund, employees must be enrolled in a job-related (technical or professional) course at an accredited educational institution, must receive credit for the course, and must complete it with a grade of "C" or better.

Refunds are limited to tuition only (up to \$150 per year).

**Work-Study Program**

San Diego area students can arrange to work 30 hours per week while taking a minimum of nine units toward an advanced degree. Flexible work schedules will be arranged around class time where necessary, and during vacations of a week or more, participants may work a regular 40-hour week.

Workweek can be reduced to 20 hours during the final year of study toward a doctorate, while receiving compensation for 30 hours — if the qualifying degree examination is passed and the doctoral dissertation is approved.

In addition to regular tuition refund, an allowance of \$5 per semester unit for textbooks and thesis costs is made.

Study in these programs is limited to engineering, mathematics, physics and related sciences.

**Educational Leaves**

Educational leaves may be granted to employees who desire to earn advanced college degrees, or to complete their senior year of college study in a job-related field.

Candidates for advanced degrees must have one year of continuous service to qualify for the program, and if accepted continue to participate in whatever Company insurance programs are in force at the time.

**HIDDEN  
DOLLARS:  
Benefits, Services Are Employee 'Bonus'**

Besides job satisfaction, a sense of personal contribution to national defense, and direct financial reward, there are other less apparent factors which make General Dynamics/Astronautics a desirable employer.

Some of these—company paid insurance, retirement benefits, etc.—involve a sizable cash outlay on behalf of employees.

Others can be measured only in terms of convenience—such frequently taken-for-granted items as in-plant food and beverage service, bulletin boards, military deferments, recreation programs, etc.

Considered together, these "fringe benefits" add up to an extra paycheck for every GD/Astro employee: hidden dollars from which he profits, even though not credited to his bank account.

**Insurance Provides Protection  
For Employees and Dependents**

Insurance provided by GD/Astro, plus the additional protection available at low group rates, gives employees a solid financial buffer against economic catastrophe which might result from death or serious illness.

General Dynamics provides \$5,000 in free life insurance for each hourly employee, while salaried personnel are insured for \$8,000.

Employees make only small weekly contributions (by payroll deduction) to boost their life insurance protection to a maximum of \$13,000 for hourly, \$40,000 for salaried workers, according to their basic earnings.

The Company provides numerous other free insurance safeguards, including health insurance, disability and accident benefits at no cost to employees.

This includes accidental death and dismemberment benefits to \$5,000, and payment of major medical expenses to \$5,000.

An employee who becomes permanently and totally disabled before age 60 and whose insurance is in effect, will receive the amount for which he was insured

(up to \$26,000) at the time he stopped working.

For only \$2.19 a week, employees can purchase health insurance for their dependents. This same low rate supplies coverage for all dependents.

In addition to group insurance, GD/Astro employees are supplied with still more protection when traveling on company business, when performing assigned tasks under provisions of "Missile Risk" insurance, and under other specific circumstances.

California employees are also covered by the California Unemployment Disability Insurance Plan, sharing cost of disability coverage with the company through automatic payroll deduction. In general, this supplies "bread-and-butter" dollars to employees absent from the work due to non-occupational illness or injury.

Occupational illness or injury is covered by Company-paid Workman's Compensation Insurance.

A \$1,000 Company-paid life insurance policy is provided for all retired participants in General Dynamics' retirement plans.

**BLOOD BANK AIDS  
GD/ASTRO FAMILIES**

An arrangement between GD/Astro and San Diego Blood Bank protects employees from excessive financial drain by supplying whole blood for transfusions at little or no cost whenever needed.

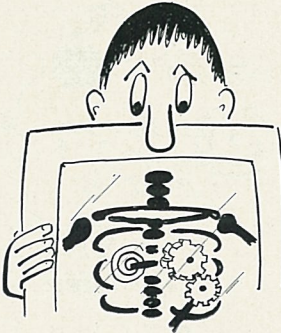
All employees and dependents may receive blood (up to five pints per person per year) with no charge except for an administration fee. This is \$10 per pint, but is normally covered under hospital incidental, supplemental accident, or major medical provisions of the group insurance plan.

Dependents include children, wife or husband, and parents (if the employee would be financially responsible for the cost of blood if it were obtained from another source).

Periodically, blood donor campaigns are held and volunteers encouraged to give blood. Donated blood is credited to GD/Astro's "account" at San Diego Blood Bank.

Drives are normally held every three months, with a customary goal of 200 pints per drive. These periodic collections are necessary because whole blood can be stored only 21 days; then must be converted to plasma.

Arrangements for release of blood are made through employee services, Bldg. 8, Plant 71, ext. 2657.





# ARA Holds Key To Leisure Fun

GD/Astro employees enjoy the benefits of organized leisure-time activity through participation in their own GD/Astronautics Recreation Association (ARA).

This is an independent, Company-sanctioned organization to which all employees automatically belong. It is dedicated to providing all members of the GD/Astro "family" with maximum leisure time enjoyment at minimum cost.

ARA is supported from profits on in-plant vending machines, pay telephones and mobile food-service units. Its operation is governed by an Employees' Council, members of which are volunteers appointed by the chief of employee services.

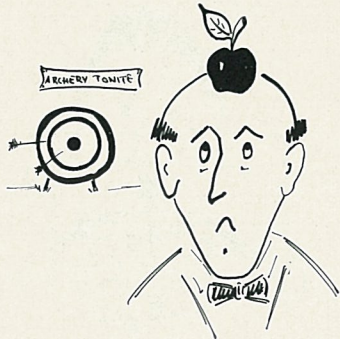
Largely through volunteer efforts, a 25-acre tract of land given to ARA by the Company at the time Plant 71 was founded, has been developed into a prime recreation area, complete with fully-equipped clubhouse.

This is "home-base" for more than 40 hobby clubs, plus both spectator and participation sports in which all employees and members of their families are welcome to take part.

ARA also sponsors frequent all-employee events—dances, parties, outings, etc.—which, with other recreation highlights, are publicized on posters displayed near vending machines throughout GD/Astro facilities, and by news coverage in General Dynamics NEWS.

New activities are added to the ARA roster as frequently as employee interest dictates. Employees may propose new recreation ideas by contacting employee services offices, or ARA Headquarters, ext. 1111 at Plant 71.

GD/Astro employees assigned to off-site bases are served by ARA organizations at their respective sites.



# ARA Master Calendar

Activities of GD/Astronautics Recreation Association are open to all employees, members of their families, and to military and contractor personnel permanently assigned to GD/Astro.

Shown here is a complete roster of clubs presently active, their meeting nights, and the ARA Commissioner responsible.

Unless otherwise specified, all meetings begin at 7:30 p.m., and are held in ARA Clubhouse. Information on any activities listed here is available from ARA Headquarters, ext. 1111, Plant 71.

Competitive sports—softball, baseball, basketball, flag football, volleyball—are also sponsored in season.

★ ★ ★

**ARCHAEOLOGY**—Meets fourth Wednesdays of each month. Ben Pierce, commissioner.

**ARCHERY**—Shoots every Thursday, 7 p.m., ARA softball diamond (pending completion of new, lighted range). Al Stone, commissioner.

**ARTS & CRAFTS**—Meets first Tuesdays, third Thursdays. D. A. George, commissioner.

**ASTRONOMY**—Meets second Wednesdays. Morry Streiff, commissioner.

**BADMINTON**—Play every Monday, 7-10 p.m., Federal Bldg., Balboa Park. Les Marr, commissioner.

**BALLROOM DANCING** — Holds instruction sessions each Monday, occasional parties. Ludy Moeller, commissioner.

**BOWLING**—Leagues play throughout year at all major lanes in San Diego area. Bryan Weickersheimer and Tony Minniti, commissioners.

**BRIDGE**—Lessons Thursdays, Fridays: tournament play Fridays. Art Saastad, commissioner.

**COINS** — Meets third Wednesdays. Vince Bacon, commissioner.

**CHORUS**—Rehearses each Monday. Al Phillips, commissioner.

**DRAMA** — Meets second Wednesdays. Presents four plays annually. Jack Garrison, commissioner.

**EXPLORERS** — Meets third Wednesdays. Periodic field trips, outings. Herm Reichert, commissioner.

**FENCING**—Meets every Friday, Downtown YWCA. Mike Hurley, commissioner.

**FISHING** — Meets first Wednesdays. Thyrsty Field, commissioner.

**GARDENING** — Meets first Wednesdays in ARA Clubhouse during May, June, September through December. Other months in Floral Association Bldg., Balboa Park. Everett Henderson, commissioner.

**GUNS**—Meets second Tuesdays. Gillespie Field trap and skeet ranges. Ezra Johnson, commissioner.

**HI-FI/MUSIC**—Meets second Tuesdays, third and fourth Wednesdays. Swap meet first Fridays. Ben Lachance, commissioner.

**ICE SKATING**—Skating each Thursday, 6:30 p.m., Mission Valley Ice Plaza. Bud Davies, commissioner.

**JR. SCIENCE CLUB**—Meets first and third Fridays. Keith Sears, commissioner.

**MODEL AIRPLANES** — Meets first Wednesdays, third Thursdays. Chuck Ogie, commissioner.

**MODEL RAILROAD (HO)** — Meets Fridays, 6:30 p.m., House of Charm, Balboa Park. New organization now forming will have own layout in ARA Area. Dave Fyffe, commissioner.

**MOTORCYCLES**—Meets first Wednesdays. Jim Kilpatrick, commissioner.

**MOVIE MAKING**—Andy Drollinger, commissioner.

**PHOTOGRAPHY** — Meets first and third Sundays, Photo Arts Bldg., Balboa Park. Ken Rinker, commissioner.

**PHYSICAL CULTURE**—Meets first Mondays. Clyde Burkhart, commissioner.

**PISTOL** — Shoots second and fourth Sundays, 9:15 a.m., San Diego Police Pistol Range, Home Ave. and Federal Blvd. Bill Geopfarth, commissioner.

**RADIO**—Meets second and fourth Wednesdays. Ed Carson, commissioner.

**RIDING**—Meets second Tuesdays. Joe Pena, commissioner.

**RIFLE**—Meets second Tuesdays, Gillespie Field Range. Open shooting, Wednesdays through Sundays, dawn to dusk. Bob Andrews, commissioner.

**ROCKHOUNDS**—Meets second Wednesdays. Fred Baugh, commissioner.

**SAILING**—Meets first Mondays. Jim Shotwell, commissioner.

**SKIN DIVING**—Meets second Wednesdays. Cliff Kickbush, commissioner.

**SQUARE DANCING** — Beginners instruction Tuesdays; advanced dancing, Thursdays. Marty Stutz, commissioner.

**SPORTS CARS**—Meets third Tuesdays. Judge Penick, commissioner.

**SNOW SKI**—Meets first Wednesdays, November through April. Larry Atwell, commissioner.

**STAMPS** — Meets second and fourth Thursdays. Art King, commissioner.

**TEEN AGERS**—Dances first and third Saturdays. John Hess, commissioner.

**TENNIS**—Meets fourth Tuesdays. Ben Cendali, commissioner.

**TOASTMISTRESS** — Meets first and third Mondays.

**TRAILERS**—Meets first Tuesdays. Ray Parga, commissioner.

**WATER SKI**—Meets first Wednesdays, April through June. Skiing Saturdays and Sundays, 10 a.m.-6 p.m., Crown Point, Mission Bay. Roy Kirkeby, commissioner.

**WIVES CLUB**—Holds luncheon meetings, third Thursdays. Special events.

## Employee Discounts

Through sales offices at employee services outlets throughout GD/Astro facilities, employees are frequently offered discount admissions to outstanding entertainment features such as Disneyland, Marineland, Circle Arts Theatre, Starlight musicals, and movies of more than usual interest.

Sales offices also offer a variety of attractive and useful souvenir items such as missile pins, cigarette lighters, color lithographs of GD/Astro products, etc.

In addition, the offices will arrange for employee purchase of most photographs appearing in General Dynamics NEWS, at a cost of 60 cents per 8x10-inch print.

Sales hours are from 11 a.m. to 1 p.m., and 4 to 5:30 p.m., Monday through Friday.

## Lost & Found Dept.

Employees who lose or find personal property on company premises or find lost articles may report to the "Lost and Found" department maintained by GD/Astro employee services.

Items are tagged with the finder's name when turned in, and may be reclaimed after a specified period if not recovered by owners.

Unclaimed articles are turned over to ARA for possible use, or are forwarded to a local charitable agency.

## Rider-Driver Ends Parking Squeeze

GD/Astro employees are encouraged to participate in "car pools" or rider-driver programs.

To bring prospective riders and drivers together, employee services office (Bldg. 8) maintains an open card file for persons offering rides to work, and for those who wish to join a car pool.

Employees complete their own cards and file them by postal zone number for ready reference. Employee services personnel automatically remove cards from the file after 60 days.

Rider-driver participants have the added benefit of "reserved" parking: two large lots at Plant 71 have been set aside for exclusive use of supervisors and by drivers of cars carrying two or more passengers.

## Military Deferments

The Company will request Selective Service deferments for employees under 26 years old and having a military obligation, if they are hired into, or transferred to, "critical skills" job assignments.

Deferment requests are coordinated through the employee services office, which also assists employees in determining their "critical skills" status.



In general this classification applies to engineers, to foremen in critical occupations, and to certain other essential skills.

## Tool Stores Serve

Under employee services direction, an independent company operates Employee Tool Stores at Col. H-1, Bldg. 5 at Plant 71, and in Bldg. 28 at Plant 19.

Here employees may purchase high quality hand tools at discount prices, arranging payment (up to \$25 at one time) if desired through a payroll deduction plan.

## RETIREMENT PLANS BUILD FOR FUTURE

Retirement plans for both hourly and salaried employees provide GD/Astro personnel with a sound base upon which to build a personal program for economic security after retirement.

All hourly employees under 65 years of age are members of the plan, with the Company paying the entire cost.

An optional plan is provided for salaried employees, with the Company paying the bulk of the cost and employees contributing five per cent of their income above \$400 per month to provide the balance.

A salaried employee's retirement income (including Social Security) may amount to more than 65 per cent of average normal earnings.

In the case of salaried personnel who leave the Company or die before retirement, their full contributions are returned—with interest. And, dependent upon age and length of service, contributions by the Company may be "vested" for their benefit.

Salaried employees may join the retirement plan by completing an application form at employee services, if they are between 25 and 65 years old, and have been employed by the company for more than a year.

Employees who are not presently eligible may sign up for the plan at any time, with their participation beginning automatically when they become eligible.

In addition, retired employees are automatically placed on the mailing list for General Dynamics NEWS, and are life members of GD/Astronautics Recreation Association (ARA).

## U.S. Savings Bonds

At the close of a recent in-plant campaign, over 70 per cent of GD/Astro employees were saving regularly through payroll deduction purchase of U. S. Savings Bonds.

The Bond program is administered by employee services, with employees authorizing deduction of as little as \$1.25 per week toward purchase of Bonds in denominations they specify. This is done by completing Bond application cards available at employee services offices.

Bonds are mailed directly to employees' homes from Federal Reserve Bank, Los Angeles, after deductions total the purchase price.



YOUR REPRESENTATIVES—Members of Employees' Con-Trib-Club Board pictured here are responsible for disbursement of funds to worthwhile charities. From left are Mary Martin, E. C. Schutz, J. F. Speed, Mike Alianelli, J. R. Mitchell, D. A. Haslanger, L. D. Graeff, Al Cernius, J. T. Schultz, B. E. Allen. Not shown, C. S. DeNardo, D. W. Glasser, E. A. Schiappa.

## Employees' Con-Trib-Club Aids All

Through their Employees' Con-Trib-Club, GD/Astro employees are afforded a convenient means to contribute to recognized charities in their own communities.

Voluntary contributions to C-T-C are made through regular payroll deductions: a means which may actually save employees money by providing them with records (for tax purposes) of all donations made. In addition, C-T-C affords employees the convenience of "giving only once" to all recognized charities.

Each C-T-C member receives a window sticker each year, which indicates to solicitors that he and his family have done their "fair share" in support of local charities.

C-T-C funds are administered through a Board of Directors, a 12-member committee comprised of representatives of unions and the company.

Membership consists of two each from IAM and GD/Astro Management Club, one each from EAA, UPPA, IBEW and UWA, and four members appointed by the company. The committee members share in disbursement of funds to welfare, health, recreation and educational institutions.

GD/Astro employees assigned to off-site locations may belong to a local branch of C-T-C. While off-site grants of funds require final approval of the C-T-C committee, a policy has been established under which funds collected in a given area are returned to charities serving that area.

## Emergency Aid Fund

Ten per cent (10%) of all donations to Con-Trib-Club are set aside for direct use by GD/Astro employees through the C-T-C-administered Emergency Aid Fund (EAF).

This fund is designed to provide financial assistance to employees and members of their immediate families who may be faced with an "emergency"—an unexpected situation beyond the control of the employee which calls for funds exceeding his immediate resources from any reasonable means.

Typical of situations eligible for Emergency Aid are those which might leave an employee's family temporarily without food, clothing or shelter, or heavily in debt because of uninsured medical expenses.

EAF grants are outright gifts. They need not—cannot—be repaid.

Formal application for Emergency Aid must be made by the employee himself. However, an employee services representative will arrange an appointment with any deserving employee who may be referred to EAF by a friend, supervisor, or union committee-man.

In some cases, it has been found that no financial aid is required. Often, applicants can help themselves—if they receive proper counsel, or if someone will intercede with their creditors on their behalf.

At other times, the problem may be one with which an outside agency can assist,

## A Typical C-T-C Year

The "doing power" resulting from the combined resources of General Dynamics/Astronautics employees who belong to Con-Trib-Club is impressive: actual and estimated C-T-C income for allocation during Fiscal Year 1963 approaches a half-million dollars!

DISBURSEMENTS — FY 1963  
(Actual and Estimated)

UNITED COMMUNITY SERVICES .....	\$340,000
HEALTH:	
American Cancer Society .....	7,500
San Diego Heart Association .....	7,500
Muscular Dystrophy .....	1,000
National Foundation .....	3,000
Others .....	12,300
WELFARE:	
Big Brothers of San Diego County .....	2,000
Family Service .....	2,500
Others .....	16,500
OTHER CHARITIES:	
Miscellaneous Agencies .....	42,500

TOTAL.....\$434,800  
EMERGENCY AID TO GD/ASTRONAUTICS EMPLOYEES:  
To date, 232 Cases .....\$ 46,964

GRAND TOTAL.....\$481,764





Advanced Earnings

In certain cases, GD/Astro employees can meet temporary financial emergencies by asking their supervisors to request a cash advance against wages or salary they have earned.

While this practice is generally discouraged, the employee services office will investigate requests, and, if appropriate, can arrange a cash advance up to the amount for one pay period (less regular deductions).

Fair Job Practices

General Dynamics/Astronautics is an Equal Opportunity Employer.

The Company has pledged that "all persons shall receive equal employment opportunities in accordance with their individual job-related qualifications, without regard to race, creed, color or national origin."

And That's Not All!

Employee benefits do not stop with those enumerated here — most of which are administered by the employee services section of industrial relations (Dept. 130-5).

In addition, safety section (Dept. 130-8) under J. W. Garrison, chief safety engineer, operates safety cribs at all GD/Astro facilities where employees may purchase a full range of safety equipment including safety shoes and prescription eyeglasses on a payroll deduction plan.

Among many programs handled by educational services (Dept. 130-3) under J. A. Croft, chief, are an information service to supply data on courses available at area educational institutions, employee classes in-plant in a multitude of job-related subjects, and the tuition refund and educational leave programs described above.

FOOD, BEVERAGES SERVED IN-PLANT

Cigarettes, candy, pastries and beverages may be purchased from in-plant vending machines. Food services are provided for employees at cafeterias at Plants 71, 19, Sycamore and Rose Canyon.

At meal hours, food is also available from mobile canteens throughout all GD/Astro facilities.

Food services are operated for GD/Astro by The Prophet Company; while Davidson Bros., a division of Automatic Retailers of America, manages vending machine operations.

Vending machine commissions are used to benefit all employees by providing financial support for GD/Astronautics Recreation Association (ARA).

Free Posting Boards

As a free service, employee services maintains large bulletin boards at key locations (at main entrances to the Plant 71 cafeteria) for posting personal notices.

Posting cards are available from employee services, although any 3 by 5-inch card (maximum size) is acceptable. Business advertising is not permitted, although employees may advertise items for sale, housing notices, etc.

Employees are asked to date and post their own cards. Employee services personnel remove the notices two weeks after the date of posting.

Loan Convenience

GD/Astro employees (age 21 and over) can apply for bank loans without leaving the plant by completing forms available at employee services offices.

Loans are made by Linda Vista Branch, Bank of America, or by The City Bank (adjoining Fed Mart), whichever is more convenient.

Both banks offer GD/Astro employees preferred interest rates and include life insurance protection at no extra cost.

Easy Bank Allotments

Through a payroll deduction plan, GD/Astro employees may make automatic deposits in a bank savings account at Five Points Branch, Bank of America.

Industrial allotment applications are available at employee services offices, where the program is administered.

Directory of Services



F. J. Traversi,  
Vice President —  
Administration



M. V. Wisdom,  
Director of  
Industrial Relations



R. A. Evans,  
Manager, Personnel  
Administration



J. R. Mitchell,  
Chief, Employee  
Services



San Diego Area

PLANT 71  
Employee Services Office, Bldg. 8, Ext. 1113  
ARA Headquarters, ARA Clubhouse, Ext. 1111

★ ★ ★  
PLANT 19  
Industrial Relations Office  
Warren Everding, Chief  
Bldg. 28 Ext. 1182

PLANT 1 (GD/Convair)  
GD/Astro Employee Services Outlet  
Bldg. 51, Third Floor, Ext. 2063

ROSE CANYON  
Industrial Relations Office  
(Mornings)  
Office Area, Ext. 2104  
Joe Frivaldsky, Representative

★ ★ ★  
SYCAMORE  
Industrial Relations Office  
Administration Bldg., Ext. 41  
C. K. Gudgell, Chief

Off-Site Bases

K. M. Williams,  
Chief, Off-Site Industrial Relations

INDUSTRIAL RELATIONS OFFICES

AMR (CAPE CANAVERAL), Florida Jack Remissong, Chief	PMR (VANDENBERG AFB), California R. K. Check, Chief
EDWARDS RS, California Larry Failor, Supervisor	FORBES AFB, Kansas F. A. Rugnetta, Representative
LINCOLN AFB, Nebraska H. E. Miller, Chief	SCHILLING AFB, Kansas L. E. Shultz, Chief
ALTUS AFB, Oklahoma A. C. Widmark, Chief	DYESS AFB, Texas C. M. Bramley, Chief
WALKER AFB, New Mexico F. E. Roeder, Chief	PLATTSBURGH, AFB, New York Raymond Kerr, Chief



## Keg Leagues Get Rolling

Regular Astronautics bowling leagues began rolling late last month, while plans are now being formulated to accommodate keggers who were unable to land a spot in these leagues.

Four additional leagues are now being organized. There will be a 750 mixed handicap loop at 6:30 p.m. and a 500 men's scratch trio league at 9 p.m. on Thursdays and a 700 mixed handicap league at 6:30 p.m. on Fridays, all at Clairemont Bowl.

A mixed foursome league will roll at 6:30 p.m. Fridays at Mission Valley Bowl.

Bowlers interested are asked to contact Joyce, ext. 1111, immediately.

## DUCKS UNLIMITED TICKETS ON SALE

General Dynamics nimrods (duck hunting variety) will join their counterparts in the San Diego area Oct. 10 for their 20th annual San Diego Ducks Unlimited dinner at Hotel del Coronado.

Tickets for the event are available through George Cowan (Astro, ext. 1061) or Payne Johnson (GD/Electronics, ext. 1377).

The \$15 per person ticket includes free social hour, dinner, a program featuring Hollywood personalities and a new film "The Black Duck." And there will be many raffle prizes, each valued at \$100 for both men and women.

Proceeds from the annual affair are used for restoration of waterfowl breeding areas in Canada.

A 75-day straight duck season opens Oct. 23 with hunters allowed a six-duck daily bag.

## Bridge Club Slates Master Point Night

Astro Bridge Club will stage a full master point night event when they gather at 7:30 p.m. Oct. 11 in executive dining room.

Winners in the group's Sept. 13 play were: Section A, Lucille Donan and Elma Buchanan (north-south) and Emma Moore and Bob Rustad (east-west). Section B winners were Mr. and Mrs. Wayne Evans (N-S) and H. H. Johnson and John Budd (E-W).

Lucille Donan and H. H. Johnson were N-S winners in Section A, while Ann McLaughlin and Maxwell Frank won E-W. Section B winners were David and Kenneth Krause, N-S, and Mr. and Mrs. Ben Hoffman, E-W.

## Astro Trailer Club Takes Part in Rally

ARA Trailer Club's annual barbecue over Labor Day weekend was held at Barrett Lake Trailer Resort with 54 persons in 14 trailers.

Wagon master was Gus Morris, with Fred Scofield in charge of food.

Last weekend (Sept. 27-29) the group participated in the Border District Travel Trailer Club of America rally at Del Mar. Trailer Club information is available from ARA Commissioner Ray Parga, ext. 3805, or Virg Marshall, president, ext. 3543.

## Discounts Offered For Plaza Skating

General Dynamics employees are offered special rates for skating at Mission Valley Ice Plaza during October by using discount coupons now available at employee services offices.

Coupons may be used at any regular session at the rink, and trim 25 cents off admission price.

Members of CRA-ARA Ice Skating Club who obtain coupons for use at the group's private Thursday, 6:30 p.m., sessions, save 35 cents—25 cents with the coupon, plus the regular 10 cent mark-down for club members.

## Veteran Pro Teaching Class in Sculpture

Second meeting of a sculpture class being conducted under auspices of ARA Arts and Crafts Club will be held at 7:30 p.m., Oct. 7, in the new Art Room of ARA Clubhouse.

On the agenda is a lecture and demonstration by veteran professional Frank Morgan, and further organizational plans.

Plant 71 contact is D. A. George, ARA commissioner, ext. 3049, while Plant 19 employees may call Francis Pall, ext. 1386 at that site.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

★ ★ ★  
**ARTS & CRAFTS**—Sculpture class, 7:30 p.m., Oct. 7, ARA Clubhouse.

**ASTRO LENS**—Meeting 7:30 p.m., Oct. 6, Photo Arts Bldg., Balboa Park. Slide show, lecture and field trip on night photography. Members and guests asked to bring camera and tripod.

**BRIDGE**—Master point night, 7:30 p.m., Oct. 11, executive dining room.

**CARD PARTY**—Benefit party Oct. 11, 8 p.m., ARA Clubhouse. Donation \$1.

**DANCE**—Halloween costume ball, Oct. 19, El Cortez Hotel. Tickets 75 cents per person at employee services.

**DISCOUNT TICKETS**—"VIPs" at Cinema 21, 7:30 p.m., Oct. 13. Loge, \$1.41; general, 90 cents, at employee services.

**EXPLORERS**—Plans for Oct. 19-20 trip to Baja to be discussed at meeting Oct. 16, 7:30 p.m., ARA Clubhouse.

**FISHING**—Trip to Salton Sea, Oct. 5-6. Meeting tonight (Oct. 2), 7:30 p.m., ARA Clubhouse.

**GOLF**—Monthly tournament Oct. 12, 13 at Carlton Oaks. Enter with ARA Headquarters, ext. 1111.

**HI-FI/MUSIC**—Kit builders' contest, 7:30 p.m., Oct. 8, ARA Clubhouse.

**MOTORCYCLES**—Poker run, Oct. 6. Starts between 9 and 11 a.m., ARA Area.

**RIDING**—Fun show and family picnic, 9 a.m., Oct. 6, ARA arena. Jr. Riders meet 2:30 p.m., Oct. 5. Club meets 7:30 p.m., Oct. 8, ARA Clubhouse.

**SAILING**—Meeting 7:30 p.m., Oct. 14, ARA Clubhouse.

**SNOW SKI**—Kick-off meeting at 7:30 p.m. tonight (Oct. 2), ARA Clubhouse.

**TEEN CLUB**—Dance, 7:30-11 p.m., Oct. 5, ARA Clubhouse.

**TRIM-FIT**—Exercise course for women. Free. Starts Oct. 8, 5-6 p.m., ARA Clubhouse.

**WATER SKI**—Blythe trip, Oct. 18-20. Contact Roy Kirkeby, 278-4040.

## Tennis Lesson Rates Offered ARA Players

"Card carrying" members of ARA Tennis Club may receive reduced rate private instruction from Ray Love, professional at Pacific Beach Tennis Club, by making advance arrangements.

Half-hour instruction sessions will be held throughout October, with ARA Commissioner Ben Cendali, ext. 3245, and Bill McHorney, ext. 2852, coordinating reservations.

## There's Still Time For Costume Dance

Tickets are still available—and there's still time to design a prize-winning costume—for ARA's gala Halloween dance to be held Oct. 19, 9 to 1, in International Room, El Cortez Hotel.

Buster Carlson and his Astro band will play for dancing, and prizes will be awarded for best costumes in several categories. Tickets at 75 cents per person can be purchased at employee services outlets.

## Parade Entry Plans Proceed

Plans for ARA's float entry in El Cajon Mother Goose Parade Nov. 24 are out of the preliminary design stage, and some basic production work has begun.

Spearheaded by Commissioner Chuck Ogle, the group hopes to repeat last year's success in which they captured the parade's sweepstakes trophy. Wins this year and next will give ARA permanent possession of the award.

ARA will stick to "mice" in its design.

Last year's float featured the blind trio who lost their tails in a carving knife mishap. This year a fourth rodent will join the squad for some clock-climbing in the "Hickery-Dickery-Dock."

Background music will come from ARA's band-organ which will be concealed in the self-powered, animated float.

GD/Astro employees with a yen for mouse culture—including everything from carpentry to paper stuffing—have been urged to contact Ogle at ext. 2551, Plant 71.

## Entry Blanks Ready For Team Bowling

Application blanks for the 12th annual team bowling tournament sponsored by the San Diego Industrial Recreation Council will be available at Astronautics employee services outlets tomorrow (Oct. 3).

Deadline for entering is Oct. 24. Tournament dates are Nov. 2-3 at Pacific Recreation Alleys.

There are three major divisions, all men, all women and mixed team (3 men, 2 women). Awards will include both series and game, handicap and scratch, for men and women, as well as team awards.

Trophy winners will be honored at IRC's Award Banquet set for Nov. 8 at El Morocco, Lemon Grove.

Team entry fee is \$16.

## ARA Hi-Fi/Music Club Will Hold Contest

A kit builders' contest, open to all GD/Astro employees, will mark the formal opening of ARA Hi-Fi/Music Club's new electronics workshop in ARA Clubhouse, 7:30 p.m., Oct. 8.

Contestants will display their kit-built high fidelity equipment, with judges—GD/Astro electronics inspectors and local audio dealers—selecting the best. Prizes include gift certificates and kit building tools. There will be door prizes.

## Wives Club to Hold Benefit Card Party

An informal fashion show, and Hindu dances by Mrs. Nancy Teague will be featured at Astro Wives' Club's benefit card party at 8 p.m., Oct. 11 in ARA Clubhouse.

Players' choice of bridge, canasta, and pinochle will be available and proceeds from the event will benefit needy San Diego area children hosted annually at a Christmas party by ARA and Employees' Con-Trib-Club.

Tickets are available for a \$1 donation at employee services outlets.

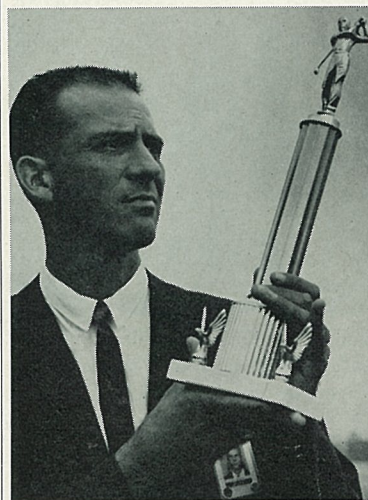
## Riding Club to Hold 'Fun Show' Oct. 6

ARA Riding Club will hold a "fun show" for members in its ARA Area arena Oct. 6 with events such as humorous grooming classes, husband-wife contests, etc.

Show gets under way at 9 a.m. and will climax with a picnic in the afternoon.

Other club activities include a meeting of Junior Riders at 2:30 p.m., Oct. 5, and a session for the senior group at 7:30 p.m., Oct. 8, both in ARA Clubhouse.

# Sports & Recreation



NUMBER ONE—Ray Mendoza (Dept. 130-5) shows off trophy he won as top man in championship flight of recent ARA golf championship tournament. Mendoza earned role as reigning plant champ by downing Jack Nichols in final round.

## Mendoza Winner In Match Play

Ray Mendoza, Dept. 130-5, battled his way to top spot this year in the ARA Golf Club tourney at Carlton Oaks.

Mendoza edged Jack Nichols, Dept. 644-0, by a 3-2 margin to win the Plant Championship trophy, after topping Bob Hoop, 4-3, and Paul Hooten, 3-2.

Other winners, by flights, were: First flight, John Sentovic over Harry Richards; 2nd, Ed Cartwright, Fulton Smith; 3rd, Jack Albright, Ed McKenzie; 4th, Cliff Gordon, Chuck Cearley; 5th, Ed Bourgeois, J. H. Bechard; 6th, Dave Jorgensen, Durwood English.

Seventh flight, Bob Vukotich; Sam Petcher; 8th, M. S. McEachern, Ron Reekers; 9th, Frank Jenkins, Harry Fritz; 10th, Duane Scott, Jim Rose; 11th, Don Crayton, Glen Smith; 12th, Fred Wynkoop, Jean McCleave.

\* \* \*  
Friday (Oct. 4) is deadline for ARA Golf Club members to apply for spots on the team to represent GD/Astro in an inter-divisional match with General Atomic and GD/Pomona Oct. 13 at Carlton Oaks.

Candidates have been asked to contact Joyce, ext. 1111. Final team selection will be based on participation in monthly tourneys.

Next ARA Golf Club meet will be played Oct. 12 and 13 at Carlton Oaks, with Oct. 9 the deadline for phoning entries to ARA Headquarters.

## Humphrey to Talk At Reserve Meeting

A. S. Humphrey, manager of GD/Astronautics management survey team, will be featured speaker at a meeting of Naval Research Reserve Company 11-5, 7:30 p.m., Oct. 15 at USNR Training Center, San Diego.

Humphrey will discuss the role of the "captive" industrial consultant in the defense industry. Speaker at an earlier meeting of the group was C. B. Wagner of General Atomic who described the Peach Bottom atomic power station.

Naval Reserve officers among General Dynamics employees have been invited to contact Humphrey at GD/Astro ext. 2445 for more information on the reserve unit and its activities.

## Anglers to Complete Salton Sea Plans

Final plans for this weekend's trip to Salton Sea (Oct. 5-6) will be discussed at a meeting of ARA Fishing Club at 7:30 p.m. tonight (Oct. 2) in ARA Clubhouse.

John Maxwell will show slides of a Mexican fishing trip. Sale of club shoulder patches, fishing contest awards, refreshments, and door prizes will round out the session.

## EXPLORERS CLUB TO VISIT MEXICO

ARA Explorers Club will make a two-day field trip to the Las Millas mining district, south of La Rumorosa, Baja California, Oct. 19-20, meeting in Tecate at 8 a.m., Oct. 19, and moving out via the main Tijuana-Mexicali highway at 8:30. Details are available from Commissioner Herm Reichert, ext. 1294.

## MOTORCYCLE CLUB PLANS POKER RUN

ARA Motorcycle Club will sponsor a "Poker Run" Sunday (Oct. 6) with starts between 9 and 11 a.m. and finish time at 4 p.m., both in ARA recreation area. Jim Kilpatrick is ARA commissioner.

## Free 'Trim-Fit' Class Begins Next Week

The 1963 edition of a "Trim-Fit" class for GD/Astro women employees and dependents will begin Oct. 8, 5 to 6 p.m., in ARA Clubhouse.

The free program is designed to help ladies "put their pounds in the right places." One-hour sessions will be held each Tuesday.

Instructor is Jan Pershal, Dept. 011-1, who has advised participants to wear comfortable clothes to the meetings. Registration can be arranged in advance by calling Joyce, ext. 1111, or by attending the first session.

## Discount Tickets To 'VIPs' on Sale

Discount tickets for the movie "VIPs," starring Richard Burton and Elizabeth Taylor and playing at Mission Valley's new Cinema 21, go on sale today to GD/Astro employees through employee services office, Bldg. 8. Loge seats are \$1.41, and general admission 90 cents, for the Oct. 13 showing of the three-hour movie.

## Two Bands to Play At Teen Club Dance

Two bands will be featured at ARA Teen Club's dance Oct. 5, 7:30 to 11 p.m. in ARA Clubhouse.

The Enchanters will play from 7:30 to 8:30, followed by the Impalas until 11. ARA Commissioner John Hess suggested school clothes as appropriate dress.

## Grant Hansen Talks On Centaur Program

VANDENBURG AFB—Grant L. Hansen, GD/Astronautics vice president and program director—Centaur, was guest speaker here last week before the local Astronautics Management Club. Hansen spoke to the group at the Elks' Club, Santa Maria, on Centaur development.

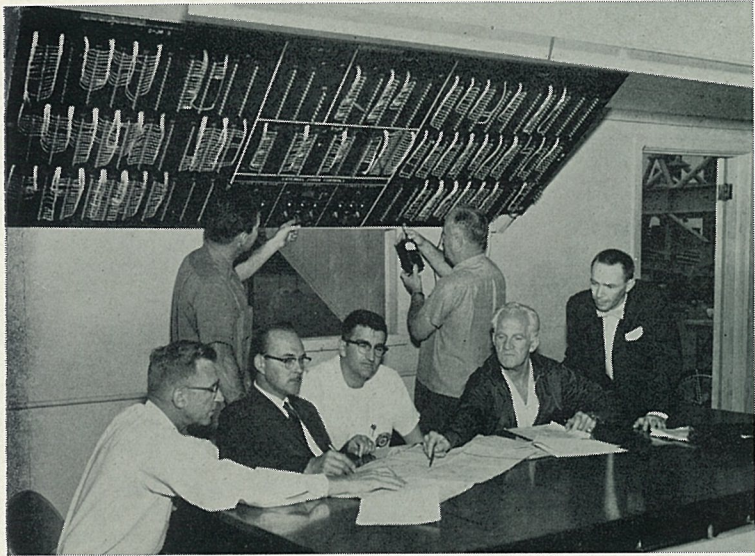
## FIRST OF GALAXY BOATS RECEIVED

First of five Galaxy sailboats ordered by ARA Sailing Club has been received and is being tested to determine any modifications desirable before delivery of the other boats. All will be berthed at Milt Reynolds Yacht Sales, Shelter Island.

## Flag Football Teams Organize For Season

An organizational meeting for team managers and individual participants in ARA's coming flag football season will be held at 5:15 p.m., Oct. 9 in ARA Clubhouse. Rich John, ext. 1111, will supply additional information.





"COUNTDOWN" — Checkout facility at GD/Convair takes on pre-launch atmosphere as systems of Little Joe II are meticulously checked by new checkout board before shipment to customer. Around table, from left, are J. J. Murphy of engineering; Richard Bloom, launch operations engineering representative; E. E. Christian, BUWEPS inspector for NASA; J. D. Sanders of GD/Convair inspection; W. I. Gregory, Dept. 131 assistant foreman. At board Dept. 131 technicians, C. A. Gonzales and W. B. House, call off meter readings.

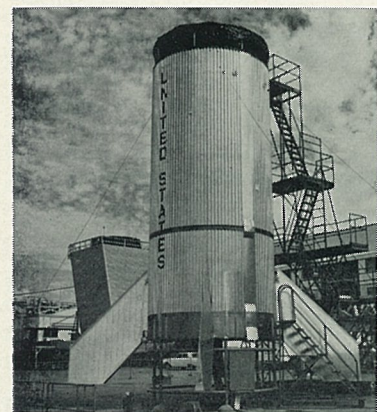
## Blockhouse Reproduced To Test Little Joe II

A realistic blockhouse operation has been duplicated, as nearly as possible, in the Little Joe II checkout facility at General Dynamics/Convair to test the second launch vehicle—and those yet to come—before delivery to the customer.

A fully-wired board has been developed to set up a Little Joe II and perform checkout of electrical and instrumentation systems, just as if it were on the launch platform. In fact, the checkout board can simulate everything but actual firing of the "bird."

The board has been arranged to represent the actual launch complex at White Sands Missile Range, with a duplication in miniature of all the wiring there. The only difference is in length of the lines. Wires, which at the New Mexico range may run 60 feet, are cut to the few feet needed to connect the board with the vehicle just outside the small wooden building in the experimental yard.

Areas on the board are divided electrically into the same areas as in the field, where the blockhouse stands 1,200 feet from launcher and an equal distance from the power room, 150 feet from the launching pad to complete the complex triangle.



NO. 2 LITTLE JOE II—Second Little Joe II launch vehicle (upper shot) and launcher completed at GD/Convair are snapped in division's experimental yard after checkout. They will be shipped to White Sands Missile Range, N.M., later this year for NASA's Apollo spacecraft testing.

But no countdown tension could be any more intent than that in the small GD/Convair checkout facility as company engineers and inspectors rivet their attention on the same detailed step-by-step checkout procedures. A complete checkout can extend from a few days to two or three weeks, depending upon the individual configuration of the vehicle. A Navy BUWEPS inspector sits in to observe results for NASA before customer buy-off.

"The board was developed from necessity through a cooperative effort and grew rapidly to its present state," explained N. R. Keough, Dept. 131 superintendent. "It assures us of a complete factory check before the vehicle is shipped to the customer."

"The board itself is based on the wire data book put together by GD/Convair engineering for use at White Sands, and can be revised and modified as we keep abreast with all changes incorporated at the firing range. This allows thorough proofing before the vehicle goes to the range and reduces workload and cost of checkouts in the field."

Wiring on the board is divided into five areas—each area a junction box. Another junction box is on the stand to represent one of the half dozen on the launcher. Wires run through a cable from the board to a junction box on the vehicle just outside the building. Three umbilical cables run down the side of the vehicle to connect with expendable cables at the launcher junction box.

When power is switched on, accurate operational checks can be made on such systems as the Algol and Recruit rocket motor ignitions, command destruct control system, which is wired and checked out with the GD/Convair-installed systems, and telemetered instrumentation.

Readings are taken from meter gauges and recorded on operational checkout instructions (OCIs). The customer can request reruns on any section of the testing to confirm OCI information and to assure that the systems operate well within limits of specified operation conditions before the vehicle is accepted.

## Surveyor Manager Will Speak Oct. 3

W. E. Giberson, project manager of NASA's Surveyor program, will be main speaker at tomorrow night's (Oct. 3) meeting of the San Diego Chapter of the Aerospace Electrical Society. General Dynamics people are invited to hear Giberson describe the program which will lead to unmanned exploration of the moon's surface. The Surveyor will be boosted into space by Centaur.

Meeting will be held at 7:30 p.m. at the IAS Bldg., Harbor Dr.

## PHYSICIST SPEAKS TO GROUPS ABROAD

Dr. T. J. Gooding, General Dynamics/Astronautics physicist in the space science laboratory, will wind up a series of talks before professional groups in his native England next week.

On Sept. 26 he talked to two groups in the Institute of Physics and the Physical Society at the Culham Laboratory, Abingdon, Berkshire County. Culham is the English center for thermonuclear research.

On Oct. 8 at the United States Information Agency in London he will address a select audience of scientists, teachers and journalists. He will speak on "Scientific Research in the United States."

Born in England, Dr. Gooding graduated from the University of Wales, then earned a doctorate at the University of Minnesota while teaching there under a Fulbright scholarship. Following a return to England he worked for the Atomic Energy Research Establishment, Harwell. He then joined the Lawrence Radiation Laboratory at the University of California where he worked prior to joining Astro in 1961.



FAR NORTH CHECKOUT — Col. E. R. Haydon, new commander of 59th FIS, Goose Air Base, Labrador, receives pilot's pin after checking out in GD/Convair F-102 from A. E. Gaul, GD/Convair field service rep.

## LIQUID CARBONIC CHEMIST TO SPEAK

Dr. A. Matesanz of General Dynamics' Liquid Carbonic division will be guest speaker at the Oct. 21 meeting of Southern California chapter, Society of Automotive Engineers, in Roger Young auditorium, Los Angeles.

Dr. Matesanz is a research chemist with Liquid Carbonic's research and development department in Chicago. His remarks will deal with cryogenics, new developments and trends in their application, liquefaction cycles and separation processes in their production, and superinsulations.

Details on the meeting are available from T. M. Paddock, 278-0102, Liquid Carbonic's San Diego manager.

## Specialists Invited To Send Abstracts

Dr. Mel Freitag of GD/Astronautics is program chairman for the symposium to be held by Professional Technical Group on Human Factors in Electronics, Institute of Electrical and Electronic Engineers (IEEE) in San Diego next May 5 and 6.

He has issued a call to interested specialists to submit abstracts of original, unpublished papers fitting the symposium theme, "The Challenge of Interdisciplinary Technology," to him at his home, 1910 Shire Dr., El Cajon, Calif.

Abstracts should be no more than 500 words in length, and must be submitted by Oct. 30.

## Clearer Communications Urged In Reliability, Quality Control

A communication barrier is preventing reliability and quality control programs from being as effective as they should be, Capt. William C. Hushing, supervisor of shipbuilding at GD/Electric Boat in Groton, Conn., told the General Dynamics Reliability Panel last month.

Speaking at a dinner meeting of the 31-member panel, Capt. Hushing said the English language in itself is difficult to understand, and that reliability and quality control need a common terminology that can be readily

grasped by everyone.

He urged members of the panel "to engineer communication so people will understand the real meaning of quality assurance, and reliability."

Warning that this will become more vital as the state of the art develops, Capt. Hushing told panel members that they must undertake a program to break down the communication barrier. "This is an opportunity that cannot be ignored and no other group is so well qualified," Hushing said.

## Frick Will Discuss Increasing Necessity For Quality Control in Space Vehicles

Charles W. Frick, vice president-engineering at General Dynamics/Convair, will be main speaker at the Oct. 14 dinner meeting of the San Diego Section, American Society for Quality Control.

Frick, who rejoined GD/Convair early this year after more than a year as NASA's manager of Project Apollo, the manned lunar landing spacecraft program, will discuss, "Necessity for Increased Quality Control on Space Vehicle Projects."

W. J. Martin, GD/Convair director of reliability, will moderate the program.

The meeting will be held at Del Webb's OceanHouse on Highway 101. Social hour is at 6 p.m.; dinner at 6:30; and program at 8 p.m.

Members and interested General Dynamics people may make reservations through: J. S. Ortega, GD/Astro, booster chairman, Plant 71, ext. 1491; Paul Gelles, GD/Astro, Plant 71, ext. 4504; Walt Hackett, GD/Astro, Plant 19, ext. 501; Frank Moore, GD/Convair, Plant 1, ext. 663;

## Six Space Scientists To Address Society

Six General Dynamics/Astronautics space scientists will appear in a panel discussion during a national meeting of the Society for Applied Spectroscopy slated for the El Cortez Hotel Oct. 14-18.

Doctors Carlos N. Abeyta, J. C. Breeze, Carmine C. Ferriso, C. B. Ludwig and M. L. Strieff, along with Klaus G. P. Sulzmann, will take part.

Discussions will involve the effects of very high temperature gases produced when re-entry vehicles come back into the earth's atmosphere, and the heating caused by the hot exhaust of rocket engines of a million pounds of thrust on spacecraft.

## Electric Boat Plans Floor Space Boost

Construction will begin next week at General Dynamics/Electric Boat division at Groton, Conn. on an additional 30,000 square feet of floor space to the Engineering Center to house design department personnel.

An additional story will be added to the design and nuclear engineering building.

Dinner price is \$3.50 and ladies are invited.

## DEADLINE SET FOR TECHNICAL PAPERS

General Dynamics persons planning to submit technical papers for presentation at the 1964 National Winter Convention on Military Electronics must have them in the hands of the technical program committee this week.

General theme of the annual conference will be "Weapons Systems Selection—1964," and industry papers dealing with such areas as ballistic missile systems, anti-ballistic missile defense systems, tactical warfare systems; related technologies; program management techniques and quality control and reliability will be considered.

The convention will be Feb. 5-7, 1964, in Los Angeles.

Papers, together with a 100-word unclassified abstract and short autobiography, are to be sent directly to Dr. N. A. Begovich, vice president, Hughes Aircraft Co., Ground Systems Group, Fullerton, Calif.

## Astro Men on Panel For Quality Society

Phil I. Harr, director of reliability control at GD/Astronautics, was leader of a three-man Astro panel appearing before the September meeting of the San Diego Section, American Society for Quality Control.

Other panelists were W. E. Woodson, interdivisional representative for life sciences and M. L. Goldberg, manager of reliability control — NOVA study group.

Topic for discussion was "Reliability Must be Programmed" with emphasis on the group's professional development program. Discussions took in reliability considerations in research and development as related to space vehicle life support systems as well as environmental, psychological and physiological monitoring systems.



"We never DID get those safety stripes painted in the safety zones . . . Can you send over another volunteer?"





**PROFITABLE MOMENT** — Harold D. Sterling, left, of Dept. 143-2 received largest Employee Suggestion award presented at Astronautics since Sept. 1, \$636.70. He receives check, certificate and congratulations from Phil I. Harr, director of reliability control.

## Astro Payments For Ideas Mount

Over \$2,500 has been awarded to General Dynamics/Astronautics employees whose ideas for reducing the division's operating costs were approved recently under the Employee Suggestion (ES) program.

In all, payment was made on 57 ESs processed since Sept. 1 with suggesters' awards ranging from \$10 to over \$600.

Top award for the period went to Harold D. Sterling, Dept. 143-2, who proposed fabrication of a fixture which would permit batch-sanding of APCHE (Automatic Programmed Check-Out Equipment) cards to uniform size. This eliminates a complete, individual checking operation for each card.

Since some 1,300,000 cards are handled in a year, total net savings on Sterling's idea are \$6,367. He received 10 per cent—\$636.70.

Jane L. Hopkins, former Dept. 143-3 employee, received the second largest award for the period. Her idea—replace loose-leaf notebooks used to log circuit board assembly inspections with a card logging system—showed savings of \$4,133. She received \$413.30.

An award of \$300.40 has been divided between J. Delotch and P. E. Grasmick, Dept. 771, who teamed to propose use of an additional missile cable support bracket to prevent cable damage during assembly. Savings on their ES totaled \$3,004.

Suggesting a new form which

combines three types of Flexo-writer worksheets earned \$275.20 for James A. Hill, Dept. 832-1, and saved the company \$2,752 over previous methods during its first year of use.

Another split award went to W. J. McKillip and C. F. Hawes, Dept. 756, who suggested using an air-powered impact wrench instead of a "breaking bar" or torque wrench to speed an assembly operation. They shared first payment of \$100 for their idea which presently shows estimated net savings of \$1,979 for its first year of use. Second checks will be issued after their suggestion has received final evaluation.

GD/Astro's ES program and the Cost Improvement Proposal (CIP) plan for salaried employees are administered by division systems under J. M. Hanley, manager.

## New Welding-Forming Method Developed

New processes and methods emerging from a research and development laboratory often face a difficult transition when they meet the "light of day" on a production line.

At General Dynamics/Astronautics recently, several operations department functions and research and development groups teamed to bridge this gap be-

## Vendor Exhibit To Be Set Up In Clubhouse

Twenty specialty vendors will display their products and processes during a two-week value control seminar to be conducted by General Dynamics/Astronautics starting next week.

The one-day vendor exhibit will be held Friday, Oct. 25, in ARA Clubhouse auditorium under auspices of GD/Astro's material department. Arrangements have been handled by R. N. Babcock, chief of vendor research and value analysis.

Members of the eight, five-man seminar teams will work closely with vendor representatives throughout the morning, conveying their needs to the suppliers and receiving in return the latest information about new items on the market.

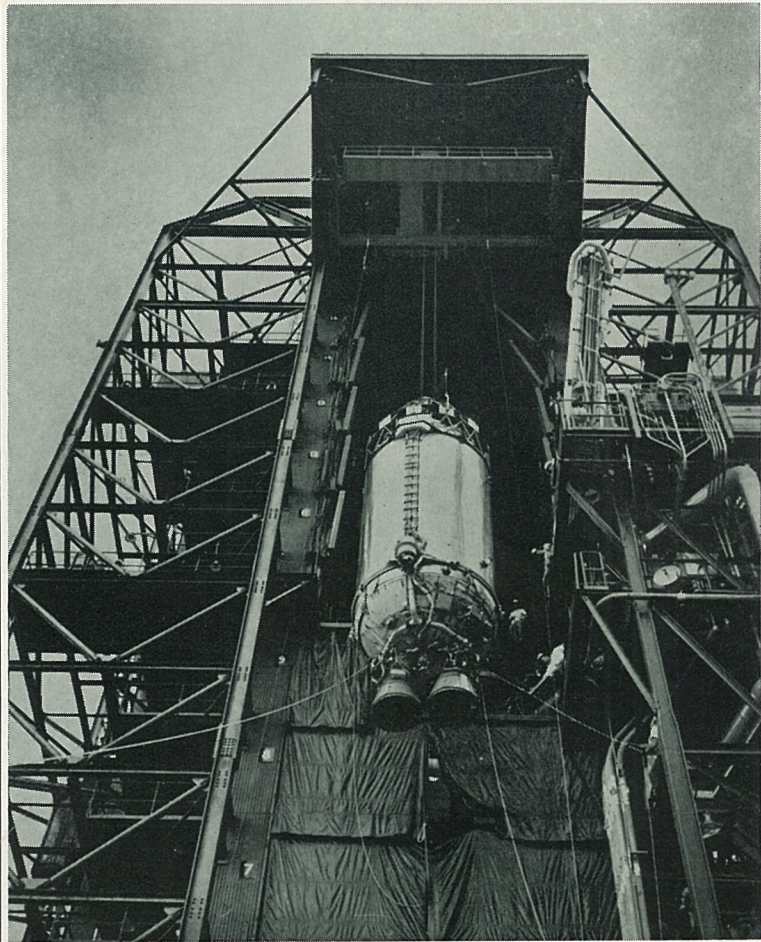
Other GD/Astro salaried personnel may arrange with their supervisors to view vendor displays during an "open house" period between 1:45 and 4 p.m. Regular bus service between the main plant and the materials building (92) will provide transportation to ARA Clubhouse.

Participants in the value control seminar will assemble in the auditorium at 9 a.m., and Babcock will open the day's activity by introducing vendors and their product lines.

Following this, E. D. Heller, manager of value control, will discuss GD/Astro's value control program with emphasis on the seminar and the supplier role.

Vendor representatives will be introduced to seminar projects and discussions of individual projects will follow.

All seminar projects are directly involved with some current phase of GD/Astro operations, and participants are assigned to provide a cross-section of skills and specialized work experience.



**EASY NOW**—Centaur flight vehicle slated for launch later this year is eased upward at Complex 36-A, Cape Canaveral, en route to mating with Atlas booster (behind curtains). This event, coupled with first full flight-duration static test at Astronautics' Sycamore Canyon Test Site, brought launch date for AC-2 closer.

## Centaur Engines, Rockets Fired

Two events occurring a continent apart brought the General Dynamics/Astronautics Centaur launch vehicle closer to a pending flight date.

At Cape Canaveral, Fla., a Centaur flight vehicle was mated to its Atlas booster at Complex 36-A. This Atlas-Centaur combination, called AC-2, is to be launched later this year.

On the opposite coast, Astronautics personnel at Sycamore Canyon Test Site put a Centaur "stand-in" flight vehicle through a 380-second dress rehearsal.

That is, the first full flight-duration static firing of Centaur with its new, improved engines, was staged. Secured in its static test stand, the Centaur fired main engines and attitude control rockets on command from its flight control system—just as the

pending research and development mission will be flown later.

This vehicle was equipped with such flight-type equipment as guidance, autopilot and telemetry and is a "sister craft" of the Centaur mated to Atlas at Cape Canaveral.

"This test was a major milestone paving the way for the next Centaur flight," said Grant L. Hansen, vice president and program director—Centaur.

He explained: "Before our next launch, we had to verify that the advanced engines would operate satisfactorily with a complete Centaur flight system. This we accomplished."

Main engines tested were dual RL-10 hydrogen-oxygen engines which deliver a combined thrust of 30,000 pounds.

## FLOX and Fluorine Responsibility Assigned to Astro SLV Project

Responsibility for integrating and coordinating all General Dynamics/Astronautics FLOX and fluorine program efforts has been assigned to the Space Launch Vehicle project under C. S. Ames, vice president and SLV program director.

J. W. Coddou, reporting directly to Ames, will head this effort, according to President J. R. Dempsey.

Coddou will be responsible for integrating and directing all FLOX and fluorine work, whether contract or company sponsored, being performed on Atlas and Centaur systems by SLV, Centaur and Atlas Weapons Systems projects and by other Astronautics departments, Dempsey indicated.

Further, Bruce McKay, director of current programs, advanced product planning department, will be responsible for all customer and field office con-

tacts and outside coordination.

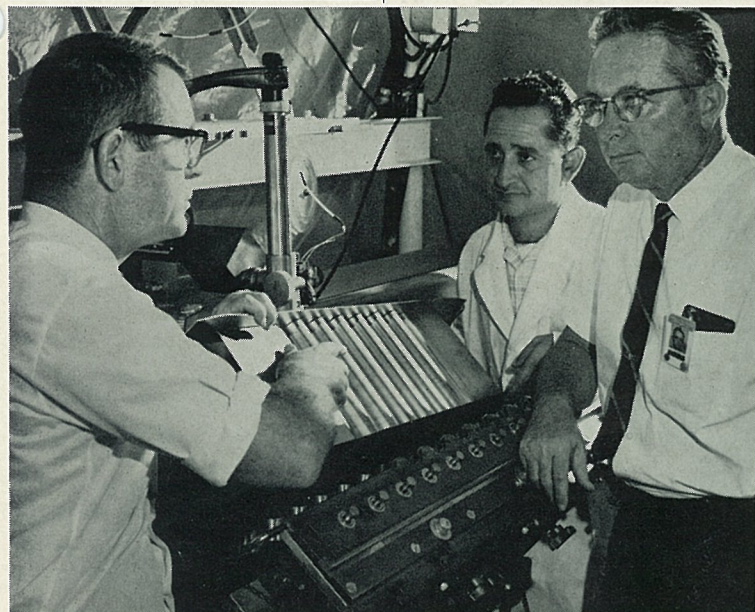
Details of a \$209,625 contract under which Astronautics will conduct laboratory tests to determine the compatibility of FLOX with Atlas propellant loading equipment, Atlas components and the Atlas oxidizer tank were announced last week by National Aeronautics and Space Administration's Lewis Research Center.

This study contract, one of two issued in this field, is actually an addition to an existing contract.

High energy liquid fluorine mixed with liquid oxygen, called FLOX, is being studied as an oxidizer for Atlas propellant, RP-1, a type of kerosene.

Previous studies at Astronautics indicate an Atlas using a 30 per cent FLOX mixture could achieve an 88 per cent increase in payload for 100 nautical mile high orbit; a 65 per cent payload increase for Atlas-Agena to

(Continued on Page 2)



**TEAM PROJECT** — R. E. Bruce, left, discusses sinusoidally corrugated titanium test structure, with C. C. Pope, tool project engineer, right. Center is Guy Buono, Dept. 290 welding technician, who used specialized welder to complete job on exotic metal to precise tolerance.

(Continued on Page 2)



# Log Book Entries

## Service Emblems

Service emblems due during the period Oct. 1 through Oct. 15.

Twenty-five-year: Dept. 143-1, J. S. Curtis.

Twenty-year: Dept. 663-4, R. L. Cox. Fifteen-year: Dept. 336-1, L. C. Stone; Dept. 452-0, R. A. Planchon; Dept. 523-6, E. D. Ruggles; Dept. 577-2, R. A. Ackley; Dept. 661-6, C. A. Benner; Dept. 715-0, F. A. Pridaux; Dept. 759-0, Anthony DeHeus; Dept. 835-3, C. M. Box; Dept. 953-5, W. J. Hammond; Dept. 961-0, F. C. Rosacker.

Ten-year: Dept. 130-6, Mary C. Barnes; Dept. 143, Beatrice H. Emeterio, Phyllis H. Milne, Harold Sterling; Dept. 144-4, R. R. Brown; Dept. 250-6, L. M. Oldham; Dept. 290-2, Charles Raymond; Dept. 322-4, Marlon Edgin; Dept. 374-1, R. B. Goodrich; Dept. 451-0, C. R. Blakeley, B. T. Gandy.

Dept. 525-6, Nicholas Strozza; Dept. 567-3, E. E. Hayes; Dept. 596-1, W. H. Eckert; Dept. 718-0, W. E. Essington; Dept. 759-0, J. S. Cuyler, G. E. Helminski; Dept. 781-0, H. S. Arneson; Dept. 782-0, H. G. Craig; Dept. 834-1, C. E. Thornton; Dept. 961-4, R. J. Janota; Dept. 967-0, W. F. Sauer; Dept. 976-3, E. G. Repp.

### AMR OPERATIONS

Fifteen-year: Dept. 571-2, D. C. Larson.

## Lost & Found

LOST—White canvas sports car cover during high winds Sept. 27 on northwest parking lot at Astro. Contact Milt Schultz, ext. 4238, Plant 71.

## Births

FISHER—Twin daughters, Carolyn Ruth, 4 lbs., 2 oz., and Kathryn Frances, 5 lbs., 2 oz., born Sept. 22 to Mr. and Mrs. G. W. Fisher, Dept. 401-2.

## Papers Presented

BARTHEL—Mary, Dept. 563-1. "A literature survey of methods for the determination of compatibility of materials with an oxidizing environment," American Society for Testing Materials, Palo Alto, Oct. 16.

DAVIS—H. D., Dept. 375-1. "Practical contamination control in aerospace hydraulic systems," SAE/Committee A-6 Aerospace Fluid Power Systems and Equipment, Kansas City, Sept. 30.

FOGEL—L. J., Dept. 590-0. "An evolutionary approach toward artificial intelligence," Pacific Southwest Navy Research & Development Clinic, Oakland, Oct. 16-18.

FOGLESONG—L. E., Dept. 563-1. "Some experiences with weldable type strain gages on thin material in liquid nitrogen environment," Western Region Strain Gage Committee, Denver, Sept. 30.

GOOD—R. J., Dept. 596-3. "Surface phenomena and corrosion," NASA/AEC Liquid Metal Corrosion Meeting, Lewis Research Center, Cleveland, Oct. 2-3.

JARLETT—F. E., Dept. 580-6. "Aerospaceplane-payload and potential," Eighth Symposium on Ballistic Missile and Space Technology, USNTC, San Diego, Oct. 16-18.

LANGE—R. O., Dept. 963-6. "Shielding a flight vehicle against electromagnetic interference during test," Ninth Tri-Service Conference on Electromagnetic Compatibility, Chicago, Oct. 15-17.

LUDWIG—C. B., Dept. 596-0, with FERRISO—C. C., Dept. 596-2. "Analysis of some rocket exhaust radiance measurements in the 2.7 region," IRIS/Tenth National Infrared Information Symposium, Fort Monmouth, N.J., Oct. 1-3.

MIYAJI—M. C., Dept. 563-1 and GROSS—W. M., Dept. 563-1. "Method employed at GD/A for testing materials for liquid oxygen impact sensitivity," American Society for Testing Materials, Palo Alto, Oct. 16.

RYAN—A. H., Dept. 580-3. "A parametric study of lunar stability," Engineering Problems of Manned Exploration, AIAA, Palo Alto, Oct. 1.

WU—W. L. S., MD, Dept. 594-3. "Instrumentation of the internal environment," Institute of Environmental Sciences, San Diego, Oct. 9.

The following GD/Astronautics personnel presented papers at the 1963 National Meeting of the Society for Applied Spectroscopy, San Diego, Oct. 15-18:

ABEYTA, C. N., FERRISO, C. C. and LUDWIG, C. B.—all Dept. 596-2. "Infrared spectra of rocket motor exhausts."

BREEZE, J. C. and FERRISO, C. C.—both Dept. 596-2. "Infrared integrated band intensity measurements behind reflected shock waves."

FERRISO, C. C. and STREIFF, M. L.—both Dept. 596-2. "Experimental determination of the slit function of a small prism monochromator."

MAKMUS, W.—Dept. 596-2. "Simplified infrared spectral emissivity calculations for small molecules at elevated temperatures."

SULZMAN, K. G.—Dept. 596-2. "High temperature shock tube transmission measurements of CO<sub>2</sub> at 4.25."

# General Dynamics NEWS

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Harry H. Ulmen, GD/Astro Dept. 756-0, has received a 25-year service emblem.

## Personals

My sincere thanks and appreciation for your expression of sympathy on the death of my husband, Ben M. Maier, Dept. 835-2. It will always be remembered with deepest gratitude. June Maier

My sons and I wish to express our deepest appreciation to GD/Astro employees for their thoughtfulness and help following the death of my son, Alan. H. M. Torzeski, Dept. 759-0

## Retirements

ALEXANDER—G. P., Dept. 403-1. Seniority date July 1, 1952. Retired Oct. 1.

BOOKER—D. H., Dept. 130-1. Seniority date Aug. 9, 1951. Retired Oct. 1.

PEDERSON—S. H., Dept. 250-5. Seniority date March 8, 1955. Retired Sept. 1.

STONE—E. H., Dept. 130-1. Seniority date Aug. 11, 1950. Retired Oct. 1.

## Astro Son in Running For Scholar Award

George E. Crawford, 17, son of GD/Astro's C. E. Crawford, Dept. 377-5, has been named a semi-finalist in the National Merit Scholarship contest for high school students in the 1964 graduating class.

A senior at University of San Diego High School, George plans a career in medicine. His extracurricular activities include swimming (school varsity team), French Club, Scuba diving.

Final Merit Scholarship examinations will be given this fall.

## Guidance Analysis Chief Is Speaker

Robert M. Williams, chief of guidance analysis at Astronautics, was a discussion leader Oct. 7-9 at an American Management Association seminar held at the Ambassador Hotel, Los Angeles.

The seminar covered "Expanding Role of the Foreman in Manufacturing Management." Topics included planning, controls, budgeting, communication and performance evaluation.

## GD/Astro Members Head Mt. Helix Club

GD/Astronautics men dominated a new slate of officers recently installed by the Mt. Helix Toastmaster Club.

Glenn E. Vail was named president; Jack Fisher, educational vice president; Warren Marsh, administrative vice president; and Durwood English, secretary.

This Club (No. 126) was recently named one of the 10 top Toastmaster Clubs in the world.

## PAPER PRESENTED AT MIAMI MEETING

James L. Carr, Dept. 317-0 at Astro, presented a special paper at the second annual UAIDE (Users of Automatic Information Display Equipment) conference Oct. 15 at Miami Beach, Fla. His paper was entitled "Automatic Visual Display Technical Manuals."



CONSULTANTS—Members of GD/Astro's unique management survey team strive to analyze organization parts in terms of the whole. From left, Manager A. S. Humphrey, Frank Lucas, Pete Norris, discuss problem.

## Better Management Technique Is Aim of 'Captive Consultants'

Although positive in approach, General Dynamics/Astronautics pioneering management survey team (Dept. 160) can, in some respects, be best described in terms of what it is not.

According to Manager A. S. Humphrey, the team is not out to criticize; not a "tiger team"; not a collection of panic-button "experts"; and, generally speaking, not designed to trouble-shoot specific problems.

Humphrey was named to head the unique organization early this year after it was established by F. J. Traversi, GD/Astro vice president-administration. It now consists of Humphrey, Frank R. Lucas and P. M. P. (Pete) Norris, plus a secretary.

Their purpose: assist GD/Astro's top and middle managers in improving the managerial approach to development and production of advanced weapon systems.

Their work consists of evaluating managerial functions, problem solving in the area of industrial management and employee motivation, and such administrative elements as budgetary control systems, employee training, establishment of manpower and workload plans, work flow and scheduling analysis, creation of departmental standards, and the application of sound organizational philosophy.

Their goal is the efficient dissemination of new and effective management techniques.

In essence, management survey team members are "captive consultants"—an assignment with a special burden.

The average industrial consultant, Humphrey explained, is called in to trouble-shoot and evaluate. All too often, he hands down a dictum, collects his fee, and retires from the scene.

The captive consultant, on the other hand, can't be an "armchair quarterback." He must live with his recommendations.

Benefits of the "staff consultant" concept are several.

Because of his in-house position, he can view each function within the perspective of the total management picture; approach problems with a greater awareness and in context.

Both Norris and Lucas have completed two years in GD/Astro's executive development program.

Lucas holds a BS degree in industrial management from Ohio State, and is completing work toward a master's degree from San Diego State. He has been with General Dynamics at both Convair and Astro divisions for seven years.

A Harvard economics degree heads Norris' credentials, with additional study in industrial management at Northeastern University and University of California (San Diego). He was previously with Gillette Co., Boston.

Humphrey's training includes master's degrees in business ad-

ministration (Harvard) and chemical engineering (MIT), with a bachelor's degree in the latter science from University of Illinois. Before joining GD/Astro he was manager of market planning and services for P. R. Mallory Co.

"The management survey team was conceived by Traversi to introduce advanced management techniques to GD/Astro," Humphrey explained. "Our intention is to evaluate the division's progress in the aerospace industry."

## FLOX and Fluorine Responsibility Assigned to Astro SLV Project

(Continued from Page 1) achieve earth-escape orbits; and a 30 per cent payload increase for the Surveyor spacecraft to be boosted by Atlas-Centaur on a journey to the moon.

"Our studies will revolve mainly around a mixture of 30 per cent liquid fluorine and 70 per cent liquid oxygen by weight," Ames said. "This concentration could produce significant performance results without extensive redesign of the Atlas SLV and its associated ground systems."

Fluorine is a gas in its natural state, and is changed to a liquid for rocket propellant applications. Because fluorine is an active element, it releases more energy when burned than the liquid oxygen it replaces. Result:

more thrust for each pound of propellant, allowing the completion of the same mission with less propellant.

Rocketdyne Division of North American holds the second study contract issued. It will do test and analysis work on FLOX with the Atlas MA-5 propulsion system.

"We are continually attempting to improve the reliability and performance of Atlas," Ames said. "FLOX appears to be a promising method for increasing performance and giving Atlas an even wider range of payload possibilities."

Atlas is currently scheduled for space launch missions in 13 different Air Force and NASA space programs.

## New Welding-Forming Method Developed

(Continued from Page 1) (Dept. 731). From this tape, sinusoidal corrugations were accurately duplicated in clamp bars and copper back-up plates of a welding fixture. In these back-up plates, inert gas manifold grooves were machined to non-accumulative tolerances of .002-inch.

Significant developments in the air bearing field accomplished by applied manufacturing research and process development (Dept. 290) were also utilized. R. D. Beemer and E. L. Christian helped apply the latest air bearing developments to the critical welding process requirements. This resulted in a "break-through" in the economics of production welding processes on thin titanium sheet.

Welds produced are a burn-through fusion-type, accomplished with an automatic tungsten inert gas weld setup.

This welder was fitted with a special fixture previously produced by numerical control and a magnetic cam follower arrangement was devised to guide the welding torch along the critical sinusoidal path. Hold-down plates served as an automatic guide to provide proper tracking for the filler wire. The welder was de-

## U.S. Civil Service Speaker Scheduled

A limited number of complimentary tickets are available to Astronautics Management Club members wishing to hear John Macy, chairman of the United States Civil Service Commission.

Discussing "How to Succeed in Business without Really Trying," Macy will appear at 8 p.m. Oct. 24 at the Pacific Beach Jr. High School auditorium, under sponsorship of University of California Extension.

Club members may contact N. D. Baird, chairman of the education committee, at ext. 2737, Plant 19.

## High School Bands Planning Jamboree

Tickets are on sale at GD/Convair and GD/Astro employee services now for the annual autumn Band Jamboree of Grossmont Union High School District to be Nov. 2 in Aztec Stadium.

Bands and specialties corps of six high schools will be featured. Performing will be bands from El Cajon, Granite Hills, Grossmont, Helix, Mt. Miguel High Schools.

Tickets may be purchased until Oct. 28. Adult price is \$1; student charge, 50c.

## Can You Beat It? 15 Years, Never Late

Robert K. McPherson of Dept. 568-6 at Astronautics lays claim to an unusual record—he has worked for General Dynamics divisions for 15 years without once being late to work!

signed on a modular principle for easy and economical expansion, since welding of major structures will be required in the future.

The project was successful: the test panel produced exceeded engineering test requirements by over 15 per cent!

## GD/Astro Mgt. Club Offers to Pay Fees

Astronautics Management Club has agreed to pay one-half the \$12 fee required for women club members interested in joining the Serra Mesa Toastmistress Club.

Information is available by contacting Helen Husseman, ext. 2316, or Dee Stivers, ext. 727.

On Oct. 22 the Serra Mesa Club will host a joint meeting in the Astronautics executive dining room at 7 p.m. with the Dynamics Toastmasters, Delta Toastmistresses and Mt. Helix Toastmasters taking part. The four groups are composed almost entirely of General Dynamics employees.

Opinion in good men is but knowledge in the making.

—John Milton



## Performance Award Goes to GD/E Man

Roy G. Bond of GD/Electronics-San Diego has received the first Individual Performance Award to be given anyone in the San Diego area by International Headquarters of the Data Processing Management Association.

Bond, GD/E data processing supervisor, is a past president of the San Diego Chapter, past chairman of the Southwestern Division. He presently serves as an international director of DPMA.

Less than 500 of the association's 15,000 members have qualified for the award which requires at least five years' activity in DPMA, and is based on points earned for meritorious service.

## Technical Meeting to Hear General Dynamics Executives

General Dynamics executives from West Coast divisions and Corporate office will have active parts as speakers and panel moderators during the Joint Technical Conference at Disneyland Hotel, Anaheim, Nov. 7-8.

T. F. Fore, GD/Pomona's engineering chief of reliability, is chairman for the conference sponsored by American Institute of Aeronautics and Astronautics, American Society of Mechanical Engineers, Southern California Section of Society of Automotive Engineers, National Security Industrial Association, and Ameri-

can Society for Quality Control.

C. F. Horne, GD/Pomona president, will be moderator for the concluding session Nov. 8 when the conference theme, "How to Improve Technical Teamwork," will be discussed. Members of the discussion panel include J. J. Riordan, director, technical logistics, data and information, Department of Defense; Dr. Eric Neubert, associate deputy director, Marshall Space Flight Center; Prof. Gayle W. McElrath, University of Minnesota; Dr. W. F. Ballhaus, executive vice president, Northrop Corp.; E. J. Lancaster, president, American Society for Quality Control.

C. W. Frick, GD/Convair vice president-engineering, will speak Nov. 7 at the design and development session. He will discuss "Improving Design Interfaces on Major Weapon Systems."

J. Y. McClure, General Dynamics Corporation director of reliability, quality control, value control, will be moderator of Nov. 8 session on testing.

E. D. Bryant, GD/Astronautics vice president, operations, will speak Nov. 8 at session on logistics. Title of his talk is "Industry Views the Modern Logistics Problem."

Other conference highlights will be keynote speech by D. J. Haughton, president, Lockheed Aircraft Corporation, and talks by Maj. Gen. F. H. Britton, deputy commander, U.S. Army Materiel Command, RAdm. Levering Smith, technical director, special projects office, Bureau of Naval Weapons.

## Wide Military and Commercial Use Possible For Test Stands

First-article demonstration of the General Dynamics/Convair test stand for checkout of F-106 pneumatic components has proved that the simple and rugged stand can live up to all claims.

Representatives from San Antonio Air Materiel Area and Aerospace Systems Division, Wright-Patterson AFB, Ohio, expressed satisfaction on the performance and versatility of the new concept of stand developed at GD/Convair for the Air Force under an F-106 contract.

The test stand for checkout of low pressure pneumatic components, such as valves, sensors, actuators, differential pressure switches, and calibration of thermostats, is designed for testing in the field and at isolated bases. Heretofore, all components had to be sent, sometimes far distances, to one of the AF overhaul depots.

The 16 stands, developed and built at GD/Convair during the last year, are expected to go late this year to AF squadrons equipped with F-106s, following minor revisions stemming from the recent demonstration.

However, the stand may be easily adapted for checkout of similar pneumatic components of many other kinds of aircraft, both military and commercial, pointed out J. D. Chapman, GD/Convair group engineer, mechanical and support systems.

Queries concerning the application of the test stand to military aircraft other than the F-106 already have been received from several agencies.

At San Diego for the first-article checkout were Hugo H. Stein Jr. of SAAMA (SANERM) and J. F. O'Brien, SAAMA (SANCTN). T. C. Ning, ASD representative, observed a portion of the demonstration which extended over a ten-day period. During this time each of 26 different components went through the step-by-step test procedure.

SAAMA representatives are expected in-plant the middle of this month for final acceptance evaluation.

Results of environmental testing completed this summer also are now in the hands of SAAMA

officials. During these tests the stand was submitted to temperatures ranging from minus 80 degrees to plus 160 degrees F. for high and low temperature storage; operational temperatures from plus 32 to 125 degrees F.; relative humidities of 95 to 100 per cent at 85 degrees F.; and life cycle test of the stand's systems.

GD/Convair design engineers assigned to the project believe that the new-type stand is now ready for successful field level use by the Air Force.

## Navy Squadron Flying Convair Ships Honored

Fleet Tactical Support Squadron One, one of the U. S. Navy's major transport squadrons, located at Naval Air Station, Patuxent, Md., continues to pile up safety records.

VR-1, the Navy's oldest transport squadron which flies Convair C-131Fs (formerly designated R4Ys) has won the COMNAVAIRLANT Safety Citation for 1963, reports Don Weaver, GD/Convair field service representative who has been with the squadron six years.

The award, made by Commander Naval Air Forces, U. S. Atlantic Fleet, was presented in recognition of the squadron's "accident free" record during the past fiscal year.

During that time VR-1 flew 14,365 hours in transporting 52,136 passengers, 1,993 tons of cargo and 60 tons of mail, a total of well over 2 million miles without an accident.

This is the third consecutive year in which VR-1 has earned this citation. During the three-year period the squadron has flown 42,657 aircraft hours and nearly 6 million miles without an aircraft accident.

Capt. Paul D. Halpin, USN, is commanding officer of the Fleet Tactical Support Squadron One, which flies C-118Bs and C-130s in addition to the C-131Fs.

## Six From GD/E 'Observe' Navy

Six General Dynamics/Electronics-San Diego men have gone to sea during the last month to observe the overall picture of operation and maintenance of electronic equipment aboard Naval vessels.

The trips were made under the Navy's Design-for-Maintenance Environmental Orientation Program established by BUWEPS Fleet Readiness Representative, Pacific.

The program is sponsored by the Navy to familiarize design personnel of BUWEPS contractors with the operating environments and maintenance aspects of weapon systems.

J. H. Thompson, GD/E manager of operations, and K. W. Strowig, manager of product test, spent Sept. 17-19 aboard the USS Ticonderoga while W. H. Jones, L. R. Crump, A. F. Casey, and J. T. Stebbins, all of GD/E Plant 2, observed a task group ASW exercise aboard the USS Bennington Sept. 30-Oct. 4.

More such trips are planned for GD/E personnel whenever possible, said John N. Mac Innes, GD/E requirements engineer.

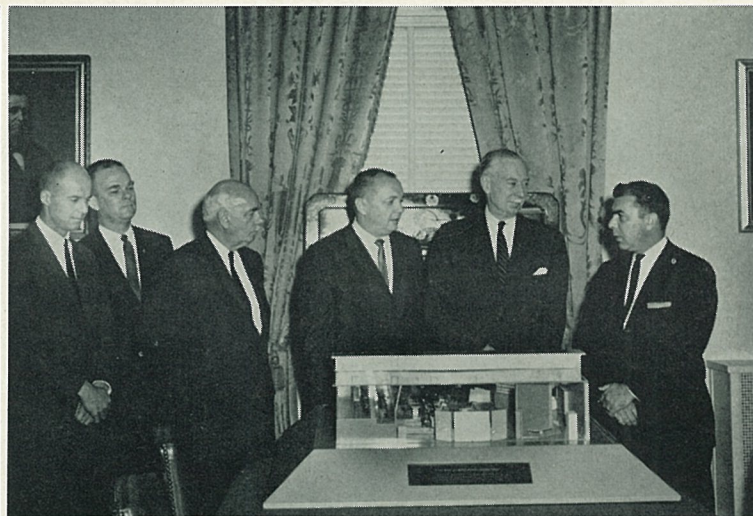
## Housekeeping 'Prize' Devised

"Reverse English" on a traveling trophy is inspiring GD/Astronautics departments at Plant 19 in their housekeeping efforts these days.

The award is presented monthly at a staff meeting conducted by W. L. VanHorn, vice president and program director—Atlas weapon systems, to the department manager whose group fares worst in a surprise housekeeping inspection.

The winner is "honored" by displaying the award—a miniature trash can with push broom—prominently in his area until it is "won" from him at a later inspection.

Each month the inspection team is headed by a different Plant 19 executive, assisted by permanent team members Frank Andrews, Dept. 365-1, and Safety Engineer Rex Andrew.



PRESENTATION — John L. Lombardo (far right), GD/Electronics-San Diego general manager, heads contingent of GD/E officials at Washington, D.C., ceremony when GD/E scale model of Project Mercury Operations Room was turned over to Smithsonian Institution. From left are Payne B. Johnson, GD/E manager of communication; Arch H. Wisdom, GD/E manager of data products research and engineering; Philip S. Hopkins, National Air Museum director; Congressman Bob Wilson of SD; Dr. Leonard Carmichael, Smithsonian secretary; and Lombardo.



S-C 4020 "ANIMATED" — Payne Johnson, GD/E manager of communication, explains S-C 4020 Microfilm Recorder to Rene Sheret and Bill Clark of Frye & Smith's art division before they set to work designing animated cartoons for film about high-speed electronic system.

## Thousands Learn About S-C 4020 Through Watching 12-Minute Film

A high-speed computer recorder, the S-C 4020 designed and built by General Dynamics/Electronics-San Diego, has the leading role in a motion picture film which will be viewed by more than 15,000 people by the end of the year.

The 12-minute film, "The Mark of Man," traces in entertaining fashion development of man's written communication down through the ages. A series of cartoon characters lead the viewer through the entire history of man making his mark, from drawings on cave walls to ultimate performance of GD/E's revolutionary electronic machine—a system which translates computer codes into drawings with electron beams.

According to Payne Johnson, GD/E manager of communication, the film not only fulfills its primary purpose as a useful sales tool, but attracts attention from the general public.

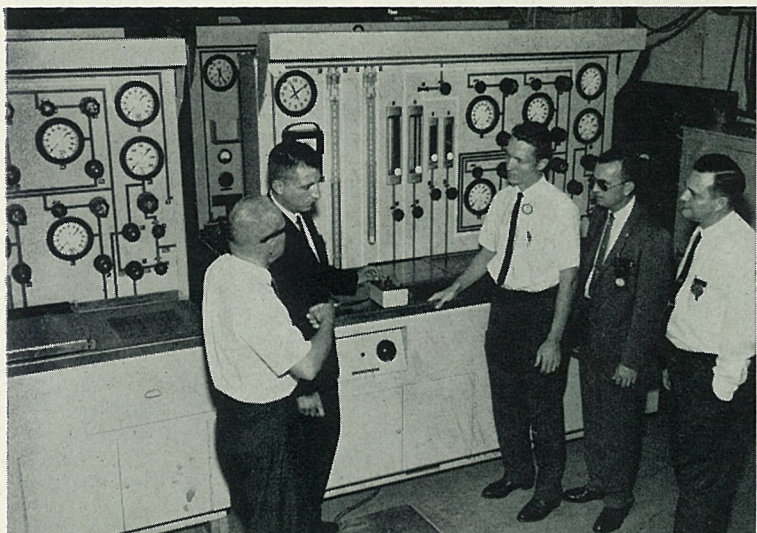
Art work was accomplished by Frye & Smith Image Division's Art Studio under direction of Rene Sheret, art director. Les Hedgecock and Bill Carter of GD/Convair's motion picture section did the actual photographing of the S-C 4020 in action at GD/E's Plant 2 facility. Hedgecock also edited the film.

"The Mark of Man" is available for showing to any interested group, said Johnson.

## Magazine Features GD/Astro Material

Articles, photographs, drawings and illustrations from GD/Astronautics communication department fill more than half of the September issue of Omniart.

Omniart is the monthly publication of the San Diego Chapter, American Institute of Architects. Articles are by C. T. Newton, Astro director of communication, and Stan Hodge, manager of art direction.



ONCE-OVER—SAAMA service engineer Hugo H. Stein Jr., second from left, observes progress on AF-requested revisions of test stand for checkout of F-106 components during recent visit to GD/Convair. Others are B. F. Ferguson, F-102/F-106 project engineer; J. E. Johnson and J. G. Polk, design engineers; J. D. Chapman, group engineer.



PLANT 19 "HONORS" — Vice President W. L. VanHorn eyes "award" presented each month to department at GD/Astro's Plant 19 which fares least well in housekeeping inspection.





**WATER BALLET**—Jim Carter, ARA Water Ski Club president, demonstrates scenes to be repeated at club's trip Oct. 19-20 to Blythe. Group now offers free instruction to members. Similar skiing organization is operated for GD/Convair, GD/E employees.—Photo by Ken Rinker, Astro Lens.

## Value Control Mgrs. to Meet

Value control managers of two General Dynamics divisions are taking an active part in today's (Oct. 16) 1963 colloquium of the Los Angeles Chapter of Society of American Value Engineers.

"The Economics of Product Effectiveness" is main theme of the one-day meeting at Marina Hotel in Los Angeles.

E. D. Heller, GD/Astro value control manager, as keynote speaker will discuss some of the subjective aspects of present-day technical and industrial life as he develops the topic, "Some Social Aspects of Value Engineering."

Heller is Southwest Region director of the national SAVE organization.

H. P. Williams, representing the San Diego Chapter of SAVE and GD/Convair value control manager, will chair the afternoon session on Value Engineering Training Techniques.

At this session E. A. Lindem of GD/Astro educational services will introduce new techniques for management orientation, seminar training, and programmed instruction. Other GD men also attended.

## ARA WATER SKIERS WILL VISIT BLYTHE

ARA water skiers will travel to Blythe this weekend (Oct. 18-20) for skiing on the Colorado River. Reservations for the trip are still being accepted from Astro employees and dependents.

Recent Water Ski Club activities have included a picnic on Mission Bay, and beginning of an instruction program.

Information on group activities is available from Stan Stein, Plant 71 ext. 3643; Betty Fleming, Plant 19 ext. 1586; or ARA Commissioner Roy Kirkeby, 278-4040, evenings.



**PRIZE CATCH**—H. S. Bowles of GD/Astro Dept. 480-0, formerly of Convair, reeled in 200-lb. marlin in a recent fishing excursion off island of Hawaii. He didn't bring it home!

## Refreshments Free For Costume Party

Witches, black cats, goblins and what-have-you will frolic on skates Oct. 31 when the Astro-Blades hold their annual Halloween costume party at the Mission Valley Ice Plaza.

Festivities get under way at 6:30 p.m. and include games on ice, prizes for best costumes, etc. Refreshments will be free.

Special discount tickets are still available at employee services offices at Astro, GD/Convair and GD/Electronics which save skaters 25 cents at each club skating session.

## DEADLINE EXTENDED TO SUBMIT PAPERS

Deadline for submitting papers for the 1964 National Winter Convention on Military Electronics has been extended to Oct. 31.

Papers from the country's military commands, governmental agencies, and laboratories will emphasize the convention theme, "Weapons System Selection—1964." Papers will tell industry the criteria for determining systems requirements, technical feasibility, and cost effectiveness.

Papers from industry will stress advances in systems and technologies.

Abstracts of 100 words and short autobiographies are to be submitted with copies of the proposed papers to Dr. N. A. Begovich at Hughes Aircraft Co., Fullerton, Calif.

The meeting, sponsored by the National Professional and Technical Group on Military Electronics and the Los Angeles District of the Institute of Electrical and Electronics Engineers, will be Feb. 5-7 in Los Angeles.

## SD Weight Engineers Will Host Visitors

San Diego Chapter, Society of Aeronautical Weight Engineers, will host a joint meeting with the Los Angeles Chapter Nov. 2 at the OceanHouse, San Diego.

A "happy hour" at 7 p.m. will be followed by a Hawaiian luau at 8 and dancing from 9 p.m.

Information concerning tickets is available through J. E. Mullen, ext. 2963 at GD/Astro.

## Dynamics Children To Act in 'Wizard'

Astro Players will sponsor a special musical version of the "Wizard of Oz" featuring several sons and daughters of General Dynamics employees at 8 p.m. Oct. 26 in the ARA Clubhouse.

The show is free to the public.

Featured will be Blanch-Mont Dance Studio pupils, including Shelley Benson, 7, daughter of E. E. Benson of GD/Convair, Linda, 15, Barbara, 14, and Timmy, 7, Ady, children of GD/General Atomic's Robert G. Ady.

## Salvage Schedule For Four Sats. Set

Salvage yard schedule for the next four Saturdays at GD/Convair and GD/Astro sites is:

GD/Astro—Oct. 19, Nov. 2.  
GD/Convair—Oct. 26, Nov. 9.

## Fall Gardening Show Date Set

Commissioners of the joint ARA-CRA Garden Club have announced plans for the group's annual Fall Show to be held Sunday, Nov. 3, in Balboa Park's Floral Assoc. Bldg.

Included in the judging will be four chrysanthemum divisions, arrangements, corsages, a children's division, and roses (single bloom entries) in eight color classes.

Entries will be accepted from any GD/E, GD/Convair or GD/Astro employee or dependent between 7 and 11 a.m. on the day of the show. Judging will begin at 11 a.m., and the show will be open to the public free of charge from 1 to 6 p.m.

ARA Commissioner Everett Henderson and Henry Boyd, acting CRA commissioner, are coordinating arrangements with the aid of club members.

## Schuele to Speak For Purdue Alumni

Alumni of Purdue University at General Dynamics divisions in the San Diego area are invited to hear Karl F. Schuele, GD/Astronautics assistant to vice president for advance product planning, speak at the Oct. 18 alumni club meeting.

Schuele's topic will be "Future Space Concepts."

The meeting will be at the Fiesta Spa Health Clubroom, 3040 Clairemont Drive, across from the Clairemont Quad. Cocktail and social hour starts at 6 p.m.; dinner at 7; and program at 8. Wives are welcome.

For reservations call Ralph McIntire of GD/Astro support engineering, president of the San Diego club, at his home phone, 276-4987.

## Astro-Blades Offer Ice Hockey Tickets

The Astro-Blades, ARA-CRA-sponsored ice skating activity, are offering reduced-rate tickets for three professional ice hockey games to be played by the Los Angeles Blades in Los Angeles.

Regular \$3.50 tickets may be obtained for \$3.25 with the club paying the difference. Reservations may be made at employee services offices.

The first game is Nov. 2 and reservations must be made by Friday, Oct. 25. A charter bus may be operated to the game, if sufficient interest is shown. Contact Barbara Gilliland, club president, ext. 4041, Plant 71.

## Astro Lens Planning Model Shoot Oct. 20

A regular Astro Lens model shoot has been set for 7:30 p.m. Sunday (Oct. 20) at the Photo Arts Bldg., Balboa Park, according to Commissioner Ken Rinker.

Models will be Paula Arciaga of Dept. 336-4, a native of Hawaii, and Sherry Harmon, niece of Frances Darr of Dept. 521-6.

Members and guests are invited to turn out with cameras, tripods and film.

# ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111).

★ ★ ★

**BRIDGE**—Special master point night, 7:30 p.m., Oct. 25, ARA Clubhouse.

**COINS**—Coiners meet 7:30 p.m. tonight (Oct. 16), ARA Clubhouse. Slide show: "U.S. Colonial Coins." Auction.

**COMMODITIES**—Second meeting of new study group, 7:30 p.m., Oct. 22, ARA Clubhouse.

**DANCE**—Halloween costume ball Oct. 19, El Cortez Hotel. Tickets 75 cents per person at employee services outlets.

**EXERCISE**—Free Trim-Fit course for women starting Oct. 8, 5 to 6 p.m., ARA Clubhouse.

**EXPLORERS**—Oct. 16 meeting, 7:30 p.m., ARA Clubhouse, to map plans for Oct. 19-20 field

trip to Baja California.

**GARDENING**—Plan now to enter ARA-CRA Garden Club's Fall Show, Nov. 3, 1-6 p.m., Floral Assoc. Bldg., Balboa Park.

**GOLF**—Turkey sweepstakes Nov. 2-3, Fletcher Hills. Starting times, ext. 1111.

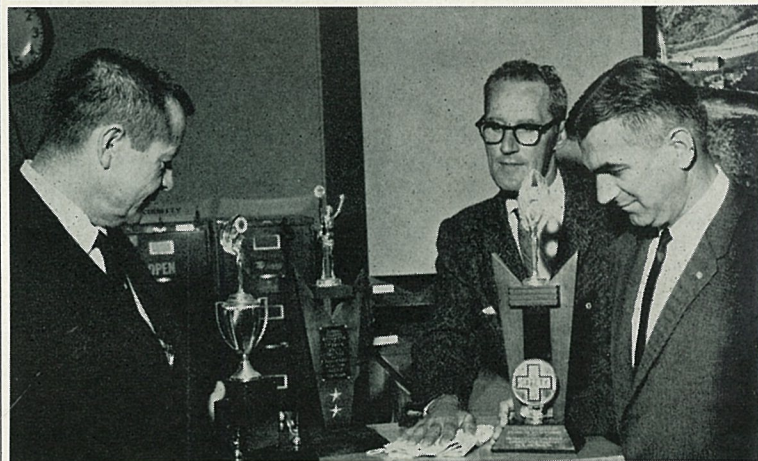
**HI-FI/MUSIC**—Manufacturer's demonstration of Audio Empire tone-arms, cartridges and turntables, 7:45 p.m., Oct. 23, ARA Clubhouse. Free.

**ORGAN**—Concert, planning for new club, 2:30 p.m. Oct. 20, ARA Clubhouse.

**RADIO CLUB**—Meets 7:30 p.m., Oct. 23, club station in ARA Clubhouse.

**TEEN CLUB**—Dance scheduled for Oct. 19 is cancelled. Next event Nov. 2.

**WATER-SKI**—Trip to Colorado River (Blythe area) Oct. 18-20. Contact Roy Kirkeby, 278-4040.



**GETTING READY**—Sycamore Canyon Test Site, headed by W. F. Chana, right, has just completed full year without lost-time accident, sufficient to earn another safety trophy. Safety Engineer W. D. Morgan, left, and Vince Farrell, chairman of safety committee, help prepare spot for trophy.

## Sycamore Canyon Site Passes Full Year of Accident 'Holiday'

Sycamore Canyon Test Site, long-time safety pace setter among GD/Astronautics-operated test bases, last month passed a major milestone in a drive that could lead to another extended

period without a lost time accident.

On Sept. 25 Sycamore Canyon completed a full year without a lost time accident and logged 919,067 manhours in the effort.

However, Edwards Rocket Site currently holds the leading position in the off-site safety records. Edwards RS is working toward what could be a three-year period without a lost-time accident. If the present accident-free trend continues, Edwards will attain the three-year peak on Nov. 8.

Sycamore Canyon still holds the all-time record for extended periods without a lost-time accident among the test installations. This is some three years and six months which was broken late last summer.

The present Sycamore Canyon accident-free period dates back to Sept. 24, 1962.

## Wrestling Coaches Sought by Schools

General Dynamics men in the San Diego area interested in earning small fees for refereeing high school wrestling matches, as well as those who would assist, on a volunteer basis, in coaching smaller grapplers, are being sought.

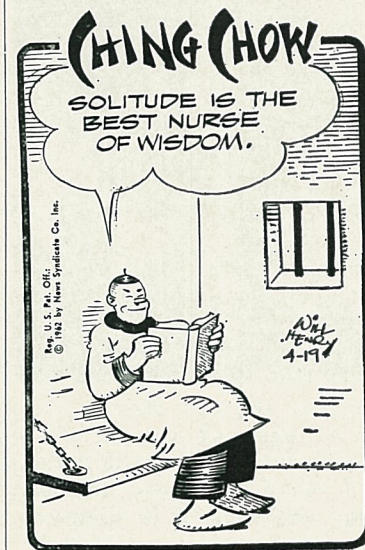
Experienced school, college or service referees are needed in local high schools and local boy's clubs. Those interested may contact Wayne Zook, ext. 1581, at Astronautics.

## State Will Return To Standard Time

General Dynamics people in California will gain the hour they "lost" this spring as the state returns to standard time on Sunday (Oct. 27).

Clocks will be turned back an hour at 2 a.m. of that day.

The time change affects GD divisions in San Diego, Pomona, and off-site facilities in California.



## Filloon Named To New Post

Appointment of Harlon D. Filloon as director of cost and value control at General Dynamics/Pomona has been announced by T. L. McPherson, controller.

The position is a new one, established to provide coordination of various existing cost reduction programs, to develop new programs where necessary and to document and report results to company management and defense agencies.

Filloon transferred to Pomona Division Oct. 1 from the Corporate Office. His 20 years of experience with General Dynamics include executive assignments in several divisions as well as Corporate Office.

Educated at Cal Tech and University of California, Filloon joined the Company at Convair, held executive positions there and at GD/Pomona for a number of years, and also with GD/Electronics in Rochester. Among other professional societies, he is a member of the Electronic Industries Association.



## Skiers Select Astro Beauty

Barbara Norris, former GD/Astro employee and wife of Vern Norris, Dept. 141-3, will represent the Astro Snow Ski Club Sunday (Oct. 20) in the annual contest to elect a queen for the San Diego Sno Ball.

Barbara was selected from a field of four candidates. She enters the contest with a direct challenge in that the past two queens have represented the Astro group.

The annual ball will be held Nov. 16 at OceanHouse.

Fifty-six ski enthusiasts turned out Oct. 2 at the Astro club's initial meeting of the year. They elected Charles A. Hill, president; Vern Norris, vice president; Lavonne Martinez, treasurer; and Jean Kunde, secretary.

On Nov. 6 the club meets at ARA Clubhouse at 7:30 p.m. to map a slate of activities for the ski year and select committees.

First skiing trip of the year is slated for the first weekend in December at Big Bear Lake where artificial snow-makers will be in operation, if the weather refuses to provide the real thing.



**VIVACIOUS**—Barbara Norris has been selected by Astro Snow Ski Club to be representative in annual contest to select queen of San Diego Sno Ball.

## TOP BASKETBALL PLAYERS SOUGHT

Experienced basketball players are being sought to man an ARA-sponsored team in the top San Diego league during the winter months.

Workouts are being staged under Coach Dave Fuller twice each week at Muni Gym Balboa Park.

Cagers with experience in higher-type circles are invited to take part tomorrow (Oct. 17) night at 7 or contact Fuller, ext. 3779, for details of further practice sessions.

League play opens in late November.

## Varsity Ball Club Is Runner-up Again

"Always a bridesmaid, never a bride" appears an appropriate tag for Astronautics' varsity softball team.

In three post-season tournaments the ARA nine finished second. Just completed was the La Mesa Invitational in which Astro lost in the finals to American Legion Post 731 by a 6-4 count. This was the same team which dropped Astro in the finals of the recent city tournament.

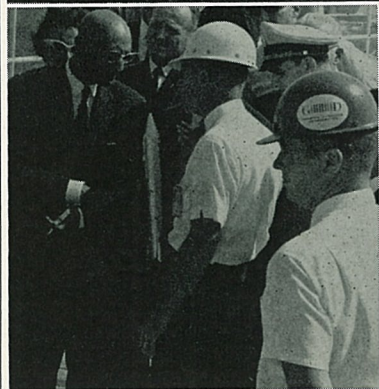
Astro gained the La Mesa final round through victories over Sproul Homes, 7-2, El Cajon Merchants, 10-8, and Linda Vista Cafe, 3-2.

Garfield Winters banged out six for eight in the tournament, while Bob Lange and Ken Crotz each collected six.

## Juniors Attracted To ARA Stamp Club

Trading will be the main order of business Oct. 24 when ARA Stamp Club gathers at ARA Clubhouse at 7:30 p.m.

Juniors are currently making a strong show in taking part in this activity with from 10 to 12 present at each session.



**OFF-SITE**—In top left Astro friends of Brig. Gen. John L. Zoeckler autograph "hard hat" for farewell party at Norton AFB. Former commander of Western Contract Management Region, he has been reassigned to Wright-Patterson AFB. Shown with him are Brig. Gen. J. P. McCoy and B. G. McNew, Astro resident manager at Norton. In top center June Vaught, veteran Astro travel reservationist at Cape Canaveral, shows off new offices at Cocoa Beach. Top right: Astro girls Sharron McClain and Carolyn Murdock inspect Atlas photo gallery in Cocoa Beach Public Library. Lower left: Mohammed Zaher, king of Afghanistan, listens

as S. B. Brandt presents Atlas-Centaur model during visit to Cape. Brandt and Bob Gray, center, are from Goddard Space Flight Center. At right is Roger Lynch, Astro launch operations manager. Lower center: Jack Lennon, left, and L. D. Reece, right, present \$5,250 check to Tom Lyons, vice chairman of AMR United Fund Drive, on behalf of Astro employees at Cape Canaveral. Lower right: Ken Newton, center, Astro operations director, AMR, presents certificates to four who helped AMR force reach 80 per cent in recent drive. From left: Bob Beasley, Bill Rhodes, Frank Sturgill and Bob Flanagan. C. R. Jackman also was honored.

## League Invites Astro Golfers

Astronautics golfers have been invited to take part in a special winter golf league program slated to open in early November at the Vacation Village golf course.

Play will be either Saturday or Sunday and will consist of 10 teams of four players and an alternate per league. Teams may be men, women or mixed. However, Astro must field at least 10 teams to organize a league.

Entry fee per team will be \$10 and greens fees, \$1 per 18-hole round. All entry fees will be returned in the form of merchandise prizes.

Dick Tobias, ARA golf commissioner, has asked individuals or teams interested to contact him prior to Nov. 1. He requests an "AVO" form including the full name, telephone extension and plant location of each player; plus a time-day preference. Entry fees are to be made payable to Vacation Village. Send entries to Tobias, mail zone 374-10, Plant 19. He may be reached at ext. 1386, Plant 19, for details.

No established handicaps are required.

## Plant Tennis Tourney Set

Astronautics Recreation Association's annual plant tennis tournament will be held over the first two weekends in November (2-3 and 9-10) at Morley Field.

A consolation event is slated, along with the usual variety of men's, women's and mixed events.

An entry fee of 50c will be charged each participant. Annual dues for Tennis Club membership are \$1.

Accepting entries through Oct. 29 will be Al Rush, ext. 2925; Cecil Norwood, ext. 3203; and Bud Campbell, ext. 1813, Plant 1.

This is the seventh annual ARA plant championship.

## Travelers Will Visit Lake Trailer Park

Astro Travelers will point their "wagons" toward the new Lake Henshaw Trailer Park over the coming weekend (Oct. 18-20) for their regular monthly outing. Bill Scott will be wagon master.

A family picnic and business meeting was held Oct. 1 in the ARA Recreation Area. Bill Scott was named chairman of a nominating committee to select candidates for office for the coming year.

## Sports & Recreation

## Committee to Weigh Atlas Launcher Ideas

Suggestions for converting a surplus Atlas missile launcher into a piece of playground equipment for children enjoying the ARA Area have been so varied and talented that special steps have to be taken, ARA President Ezra Johnson reports.

(ARA acquired the launcher to use in erecting the Atlas display. Later it was not needed, so a contest was held for suggestions on how to convert it to playground equipment with a \$50 cash prize offered for the best suggestion.)

Johnson this week announced the appointment of a special committee to weigh all suggestions for safety, engineering and cost factors and to select a winner. The committee will then carry out all steps necessary for conversion.

J. J. Fromlath (Dept. 759) is the committee chairman. His group includes Maynard Bjorstrom, H. E. Benjamin, T. L. DeBaca and Joe Merk, all Dept. 759, R. D. Gallagher and L. R. Warren of Dept. 290, M. W. Peth-

bridge of Dept. 146, Ray Mendoza and Willard Harwood of Dept. 130.

When completed, the launcher will take its place among a rapidly-growing array of equipment of every type gathered and installed for use of children visiting the ARA Area.

## Magazine Features Dynamics Rail Fans

General Dynamics model railroad fans appear this month in a major article in Model Railroader magazine, which features operation and layout of San Diego Model Railroad Association's activity in Balboa Park's House of Charm.

Mentioned or shown are M. C. Brogan, retired GD/Astro employee, Arden Berquist, Dave Fyffe and Bud Davies of Astro, and Karl Busch of GD/Convair.

Busch is past president of the San Diego club and has filled important posts in National Model Railroad Association. Fyffe, ARA commissioner, is currently spearheading efforts to design and build an HO-scale layout in ARA's recreation area.

## Two From GD/Astro In Old Globe Cast

GD/Astro is represented in "Sunday in New York," playing this month at Old Globe Theatre by Charles Boyd, Dept. 960-2, and Jane Couchois, wife of J. R. Couchois, Dept. 480-0.

Boyd, a flight test engineer, is handling his second role "on the boards" after appearing in a San Diego City College play last spring.

Mrs. Couchois works overtime in the show, assisting with set changes, and playing five different roles in the romantic farce.

## GOLF CLUB SLATES TURKEY SWEEPS

Annual turkey sweepstakes event of the ARA Golf Club will be held Nov. 2-3 at Fletcher Hills in a low gross, low net event. Starting times may be reserved between Oct. 21 and Oct. 30 by calling Joyce, ext. 1111.

## New Intermediate Dance Class Slated

Popular demand has prompted ARA to set a tentative start date for a new intermediate-advanced ballroom dance class as Oct. 23.

An organizational meeting held recently shows that the class can be scheduled, if additional students register. It is designed primarily for recent graduates of beginners and intermediate classes sponsored by ARA or those with nominal professional instruction.

Classes will be for one and one-half hours, beginning at 7:30 p.m., each Wednesday at the ARA Clubhouse. Cost for the 12-week course will be \$9 per person.

Ludy Moeller, dance commissioner, would appreciate a call from those interested in taking part. He may be reached at ext. 841, Plant 71.

## Astro Rockhounds Plan Mexico Trek

Pinto Wash, Mexico, and other nearby collecting areas will be the goal of Astro Rockhounds Nov. 2-3 when they trek eastward for a monthly field trip.

Plans call for rallying at the Imperial Mid-Winter Fairgrounds, Imperial, at 7:30 a.m. Nov. 2. After filling gas tanks, the group will proceed directly to Pinto Wash where a small collecting fee will be levied.

Those desiring to stay overnight may do so at the Fairgrounds with a \$1 fee charged for bathroom and shower facilities. The Imperial Gem Show will stage a "swap meet" later that day.

On the return trip Nov. 3 a stopover will be made for collecting stones at the Midway Wells area.

## Anyone Interested In ARA Organ Club?

A unique new ARA activity—an organ club—may be formed as result of a concert and organizational meeting to be held in ARA Clubhouse at 2:30 p.m., Oct. 20.

Admission to the concert is free, and will feature a professional performing music of all types on an electronic organ.

Potential activities of the new organization may include additional professional concerts, recitals featuring club members, and possibly group organ instruction at low discount rates.

Additional information on the initial program is available from ARA Headquarters, ext. 1111.



"Most gun-shy dog I've ever seen."





COMMUNICATIONS MEET — Roger Lewis, General Dynamics president, stresses need for "planning ahead" at first GD wire communications conference, held in New York Corporate headquarters Sept. 24-27.

## O'Sullivan Appointed Cost Analysis Head

Richard C. O'Sullivan, who joined General Dynamics Corporate Office in 1962 as a financial analyst, has been named director of cost analysis, W. T. Lake, Corporate comptroller, announced this week.

O'Sullivan, a 1950 graduate of DePaul University, Chicago, with a BS in commerce, and a 1955 University of Detroit graduate with a MBA degree, was assistant to the president of Curtiss-Wright Corp., Woodridge, N. J., before joining Dynamics. He served in the Marine Corps in 1945 and 1946.

### "GENDYNAMIC PARIS" CABLE ADDRESS

General Dynamics Corporation office in Paris, France, has established a cable address to expedite messages. The cable designation is Gendynamic Paris. Messages may be sent to the New York switching center for direct routing to Paris.

## Planning For Future Important, Says Lewis

General Dynamics' communications system was described by Roger Lewis, president, as the "central nervous system which binds together the Corporation's 85,000 employees" as he opened the first conference of GD communicators in New York City late last month.

He went on to say that the assembled communications representatives are responsible for providing the diverse and geographically scattered facilities of the Corporation with an efficient and economical communications network, and warned that "it is essential for all participants to avoid the dangers of looking only at the immediate requirements and current problems."

"Planning ahead to meet the future communications requirements of the Corporation is the most important part of the communications function," he emphasized.

In general remarks on the Corporation, Lewis said that the com-

pany, as a whole, is healthy and vigorous and would continue to play a dominant role in the nation's industrial defense effort.

"At the same time we will work toward increasing the Corporation's share of the commercial market," he pointed out.

Bringing ideas and problems of the wide-spread Corporate communications network into single focus was termed the greatest benefit of the Corporate meeting, called by Robert E. Bennis, GD coordinator of wire communications.

"A closer working alliance on common problems should promote better Corporate communications service and spark a united effort to reduce costs," was the opinion expressed by delegates who represented 10 different divisions, the Canadian subsidiary, and Corporate Office.

Each division's communications requirements, existing service, problems, and proposals were outlined during the Sept. 24-27 gathering, first of a series of other conferences both on Corporate and divisional level.

Panel discussions dealt basically with control of communications costs, covering methods of control affiliated with station equipment, trunk lines, switchboards and operators, dial equipment, long distance calls, personal calls.

Centrex, new telephone service for direct in-and-out dial service, was the subject of a key discussion. Delegates inspected the Centrex installation at the Olin Mathieson Chemical Corp. in New York City and other new projects now in progress at the Bell Telephone Laboratories Research Center in New Jersey.

The 19 conferees heard C. M. Barlow, GD director of administrative services, sum up objectives of GD wire communications thus:

"It is the policy of General Dynamics to develop and maintain the most efficient, dynamic wire communications system at the least cost commensurate with the services performed to meet adequately the need for communications between the Corporate Office, divisions, and field offices; with customers of the company, including branches of the armed services, with sub-contractors and suppliers, and with persons and companies outside the Corporation for effective conduct of business.

"It is the wire communications policy of General Dynamics to permit and encourage its divisions to operate individually within the scope of their authority and to permit its divisions generally to make those decisions which affect their own operations.

"However, it is Corporate policy to advise and guide the divisions in their inter-relationships and in circumstances where a decision or operation of one may affect another or the Corporation as a whole," he concluded.

Divisions represented were GD/Astronautics, GD/Convair, GD/Fort Worth, GD/Pomona, GD/Electronics - Rochester, Stromberg-Carlson, General Atomic, Electric Boat, Electro Dynamic, Material Service, Canadair Limited, Corporate Washington, D.C., field office.

## 'Success of Value Engineering Rests on Executive Support'

Earlier this year, F. J. Traversi, General Dynamics/Astronautics vice president-administration, participated in a discussion, "An Executive View of Value Engineering," before Los Angeles chapter, Society of American Value Engineers (SAVE).

His remarks were printed in the September "SAVE Journal," and extracts amplify management's views toward value engineering at GD/Astro.

\* \* \*

"Value engineering today is a 'must,'" Traversi said. "I believe in it firmly. The rest of our management believes in it . . .

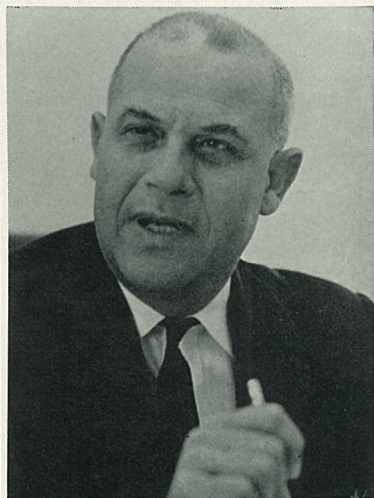
"We must produce quality hardware at the lowest possible cost.

"For years we've been cost conscious, or should have been. Today this is even more essential.

"You've got to take a look at what can be done to save money; to save on the cost of the products, cost of the hardware;

government dollars, your dollars, my dollars.

"Anything worth doing at all is worth doing well. This is old hat, but one of the pitfalls we run into in this business . . . is that of going through the motions and giving functions 'lip service' . . . In order for value engineering to function, it must have unqualified top management support or you



F. J. Traversi

might as well not have it at all.

"Because if it doesn't have (this) support, and you have a group of technicians or highly qualified people going through the motions while top management takes a 'ho hum' attitude, it may look good, you can publicize it, but it winds up costing more money than it saves . . . and that's pretty difficult to hide."

\* \* \*

"The design engineer traditionally tends to overdesign.

"He says — and perhaps with some professional justification — that it's not good enough just to meet specifications, but 'let's spend a little more money and make it better.' He says, 'It's made of excellent material . . . aluminum has always worked, and it's great, and it meets all the tensile and stress requirements, but let's go to titanium because it's better.'

"Then the value engineer comes along and asks, 'Why gold-plate it?' The designer says, 'Well, because it's more reliable.' And we ask, 'How much more reliable? What's the difference?'

"And many times, when you boil it down, you don't need it!"

\* \* \*

"Value engineering is not a mystic cult. There's no mystery to saving bucks.

"Anything we do in business can be reduced to the common denominator of the dollar. You can measure everything in terms of a buck — plant and equipment layout, equipment productivity, manpower and machine loading, overtime, quantity and quality of supervision, employee morale. You name it, and I'll reduce it to the common denominator of the dollar for you . . .

"Value engineering is here to stay. And as long as everybody involved in such a program does a good job, it's going to stay."

## Award of Pin to I. M. Laddon Recalls Early Air Triumphs

A veteran General Dynamics director, and one of aviation's foremost early-day design engineers, was honored last week in the Corporate Offices in New York City.

He is I. M. Laddon of San Diego, whose distinguished career was closely linked with the growth of one of General Dynamics' older "roots" — Consolidated Aircraft of the 1920s and 1930s, which later became Convair and a division of General Dynamics. Laddon received his 35-year service emblem from Roger Lewis, president.

A graduate of McGill University, Laddon was with Cadillac Motor Co. when he shifted to the Engineering Division of the U.S. Air Service in 1917 and during the next 10 years established himself as a foremost civilian de-

sign engineer, chief of the Design Branch 2 (heavy aircraft) at McCook Field. Among his designs were the GAX attack plane of 1919, the all-metal CO-1 of 1921. The Bendix-Laddon disc wheel and integral brake became standard equipment in the late 20s.

It was during a Golden Age of aviation, during which public attention was centered on aircraft as never before (greatly fanned by Lindbergh's flight of May 21, 1927) that Consolidated Aircraft beckoned to Laddon. He joined the company in 1927 and headed a field staff of engineers at Dayton, O., close to procurement headquarters. When a heavy bomber design plan was dropped, Laddon turned his engineers to a Navy competition for a flying boat of more than 80 ft. wing span. Laddon designed an all-metal hull and the plane was hurried to completion at Buffalo (where the company's plant was located) in December, 1928. It was the XPY-1, first flown Jan. 22, 1928. Laddon (who always insisted on making the first flight in any plane of his design) was on board. This was the forerunner of the famous wartime PBX Catalina, after it had been refined first as the XP2Y-1 and then the XP3Y-1.

In early 1939 when the Air Corps asked for a bomber with more than 300 mph speed, 35,000 ft. operating ceiling and 3,000 mile range, Laddon started design work immediately. The airplane was designed and built and made its first flight Dec. 29, of the same year, a remarkable feat of design and construction. This was the XB-24, the first of thousands that Convair built for wartime service.

Laddon became a vice president and director in 1935, the year the company moved to San Diego, and has been a director ever since. From 1941 to 1948 Laddon was executive vice president of Convair.

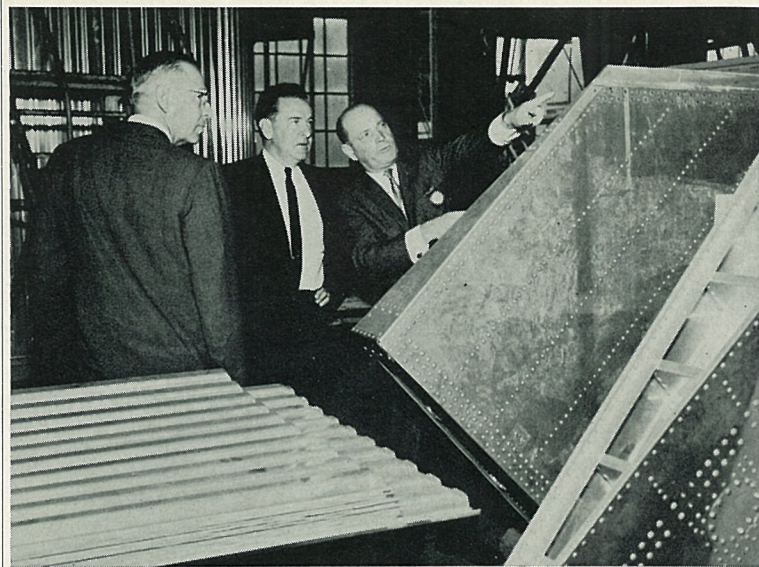


MILESTONE — Roger Lewis, right, president of General Dynamics, congratulates I. M. Laddon, longtime member of board of directors, on 35 years with company.

## SCIENTISTS TO HEAR DYNAMICS EXPERTS

Three General Dynamics specialists will present papers during the eighth Symposium on Ballistic Missile and Space Technology at the Naval Training Center, San Diego, this week (Oct. 16-18).

F. E. Jarlett of GD/Astronautics will speak on "Aerospace-Plane Payload and Potential"; C. V. David, General Atomic, on "Engineering Aspects of the Orion Concept"; and P. R. Shipps, also General Atomic, on "Preliminary System Characteristics of Orion Space Propulsion."



GOVERNOR VISITS — GD/Convair President J. H. Famme points out features of Little Joe II components to Gov. Jack Campbell of New Mexico during recent visit to San Diego division. At far left is R. H. Biron, Corporate vice president.



# Business Backlog Increases and Income Continues to Climb

Consolidated net income of General Dynamics Corporation for the nine months ended Sept. 30 amounted to \$41,892,218 or \$4.19 per common share, Roger Lewis, president, announced late last month. This compares with \$33,992,194 or \$3.40 per common share during the same period in 1962.



Roger Lewis

Earnings for the third quar-

ter of 1963 were \$15,857,442, or \$1.59 per common share compared with \$11,147,777 or \$1.11 per common share in the third quarter of 1962.

Net sales for the first nine months of 1963 amounted to \$1,036,460,597 by comparison with \$1,498,642,793 for the equivalent period last year. Net sales for the third quarter were \$330,281,723 compared with \$441,247,089 during the same quarter last year.

Lewis pointed out that General Dynamics' earnings during the first three quarters of 1963 and all of 1962 were not subject to United States income taxes as a

result of carrying forward the unused portion of the loss reported by the company in 1961.

Without the loss carry forward, he said, earnings for the first nine months of 1963 would have approximated \$23,100,000 or \$2.31 per share compared with \$17,700,000 or \$1.77 per share during the equivalent period in 1962. Net income for the third quarters of 1963 and 1962 would have approximated \$8,600,000, or \$.86 a share, and \$5,700,000, or \$.57 a share, respectively.

Lewis said that the sales volume for the year was expected to continue at approximately the

same rate indicated for the nine months. The flow of new business continues at satisfactory levels, he said, with new orders booked during the first nine months approximately 18 per cent higher than those received during the same period of 1962.

Backlog of firm orders on Sept. 30, amounted to \$1,185,000,000, an increase of 20 per cent over the \$984,000,000 backlog on the same date a year ago. Neither figure includes orders expected to be funded or negotiated as part of government programs already authorized.

Lewis reported that development of the F-111 bi-service fighter-bomber was progressing on schedule at the company's Fort Worth division and that 23 other industrial companies had been selected as subcontractors for components of the advanced weapon system.

The Report to Share Owners for the nine months ended Sept. 30, 1963, mentioned that the F-111 bi-service fighter-bomber is progressing on schedule at Fort Worth division and called attention to the recent Tokyo to London flight of a B-58 (also built (Continued on Page 3))

## GENERAL DYNAMICS

ASTRONAUTICS EDITION

# NEWS

Vol. 16, No. 23

PUBLISHED BY GENERAL DYNAMICS CORPORATION

Wednesday, November 13, 1963



"THEY LOOK TO YOU"—Children, aged, handicapped, lonely benefit from Con-Trib-Club donations made through payroll deductions. Typical of many agencies supported by United Community Services funds—and help from GD donors—are (top left) Neighborhood House playground where lively youngsters can play their games safely off crowded streets. Center fills social, recreational needs of underprivileged children—grownups, too—in overcrowded areas. At top right, elderly grandmother is visited by qualified nurse under Visiting Nurses Association program which provides skilled nursing care wherever it is needed without regard to ability to pay. At lower left, boys attached to military services and far from home can find fun and companionship in United Service Organizations. At lower right, little ones, afflicted with dread cerebral palsy are helped as much as humanly possible in United Cerebral Palsy Foundation therapy centers.

## Give 'Fair Share' Is Con-Trib Plea As Drive Starts

Coordinators and solicitors from major General Dynamics/Astronautics departments gathered today for final briefings on the Employees' Con-Trib-Club membership campaign which kicks off Monday (Nov. 18).

This year Con-Trib has set its sights on a goal of \$520,000 to be achieved by drive's end, the day before Thanksgiving (Nov. 27).

The appeal is simple. Every employee is asked only to do his Fair Share.

F. J. Traversi, GD/Astro vice president—administration, is serving as campaign chairman, and has given management's fullest endorsement to the Con-Trib-Club effort.

Similar support has come from labor unions representing GD/Astro employees — International Association of Machinists, Engineers and Architects Association, International Brotherhood of Electrical Workers, United Plumbers and Pipefitters Association, United Welders of America.

The half-million-dollar goal can be met only through the full support of all employees. Those who are not presently Con-Trib-Club members will be encouraged to join. Present members will be urged to meet a Fair Share quota in their pledges.

During the campaign each employee will be contacted by a solicitor—normally a member of first-line supervision, accompanied, if applicable, by the employee's union committeeman.

Solicitors will be prepared to explain Con-Trib's operation, the payroll deduction plan through which employees contribute, and will present employees with individual "tab" cards on which to indicate their response to the appeal.

A "Guide for Giving" on the reverse side of each card will assist all in determining a Fair

Share gift relative to earnings. This runs from 50 cents per week for employees with a \$2 hourly rate to proportionately greater amounts for those with higher (Continued on Page 2)

## Two Transfer To New York

Carl J. Oles, labor relations administrator at GD/Fort Worth, has been named Corporate director of labor relations, and H. S. Wiseman, assistant factory manager of assembly at GD/Fort Worth, has been appointed Cor-



porate director, industrial engineering and operations support.

Oles reports to A. A. Hendrix, Corporate vice president—industrial relations, and Wiseman to R. M. Hatcher, Corporate director, operations service.

Oles joined GD/Fort Worth in December 1954 as an industrial relations analyst. He has been labor relations administrator since 1957.

After completing undergraduate work at the University of Maryland and George Washington University, Oles received his (Continued on Page 3)

## Value Engineer Teams Earn Withee's Praise

Eight General Dynamics/Astronautics value engineering teams drew praise from W. W. Withee, vice president—engineering, as the division's second value engineering seminar of 1963 drew to a close earlier this month.

Withee's remarks concluded the final seminar session at which representatives of the eight five-man teams participating in the two-week program made informal presentations to management.

Each team had concentrated on a hardware project selected both for its instructional value, and because subsequent production might be measurably affected by value engineering recommendations.

Significant savings were attached to team suggestions.

Making presentations were R. L. Stillwell, Dept. 523-6, Team #1; R. L. D'Abadie, Dept. 380-1, Team #2; Lee Cox, Dept. 832, Team #3; L. E. King, Dept. 860, Team #4.

Team #5 recommendations were presented by W. C. Seaforth, Dept. 143-3; Team #6 by D. R. Thomas, Dept. 380-6; and Team #7 by M. N. Osborn, Dept. 525-1.

Making the presentation for Team #8 was Major Mike Kentosh, USAF, who, with Majors Fred Gluck, John E. Doyle and J. F. Gricius Jr., is assigned to the Air Force Education-with-Industry program at GD/Astro. All were seminar participants.

Withee noted that those who (Continued on Page 2)

## New Systems Dept. Created at Astro

Formation of a new systems development department at GD/Astronautics has been announced by President J. R. Dempsey.

The new organization is a consolidation of former advanced product planning and advanced systems departments under Vice President W. H. Patterson, reporting to Mort Rosenbaum, vice president—research development and engineering.

F. J. Dore continues as director of advanced systems, reporting to Patterson.

Responsibilities of the new systems development department cover all aspects of developing advanced programs and advanced versions of existing projects, including technological investigation, advanced systems analysis, (Continued on page 2)

## Dollar Goal Applies Only to San Diego

Coincident with the Con-Trib-Club drive conducted at GD/Astro's San Diego area facilities, similar campaigns are under way "off-site."

The dollar goal of \$520,000 applies to San Diego alone—including Point Loma and Sycamore Canyon.

Individual goals will be set at each off-site base, contingent upon need in these communities. Con-Trib-Club funds raised in off-site areas are all disbursed in those areas.

## Six College Students Earn Astro Grants

General Dynamics/Astronautics has awarded scholarships for the current semester to six San Diego State College students.

Grants are for \$75 each, and were made on the basis of scholarship, aptitude, and likelihood of the student's success in a chosen field. If scholarship standards are maintained, the awards can be renewed for each semester of undergraduate work.

Recipients of current scholarships are John J. Emrich, chemistry; Oliver L. Frey, engineering; Audrey J. Knauer, Raymond J. Walker and Roger C. Fryer, physics; Raymond E. Rogers, accounting.



## Log Book Entries



J. D. Willis, Dept. 310-0, has received his 25-year emblem at GD/Astronautics.

## Service Emblems

### ASTRO

Service emblems due during the period Nov. 1 through Nov. 15.

Twenty-five-year: Dept. 140-0, R. H. Gilliland.

Twenty-year: Dept. 151-0, C. L. Ambler, P. V. Cook; Dept. 661-2, W. E. Showley; Dept. 758-0, V. A. Bentley; Dept. 759-0, B. L. Ennis; Dept. 835-3, H. S. Murphy.

Fifteen-year: Dept. 210-0, C. M. McKenzie; Dept. 250-2, D. L. Essenmacher; Dept. 362-2, C. W. Younger; Dept. 380-1, R. L. D'Abadie; Dept. 641-4, G. N. McMillan; Dept. 758-0, J. W. Norris; Dept. 780-1, Ruth M. Young.

Ten-year: Dept. 146-4, D. M. Brown; Dept. 250, N. L. Currier, F. E. Jarvis, Warren McDaniel, L. J. Wood; Dept. 324-6, R. A. Manson; Dept. 401-6, R. E. Costa; Dept. 402-1, Richard Moore; Dept. 410-0, C. W. Baer; Dept. 451-0, M. T. Grove Jr.

Dept. 512-2, R. G. Rose; Dept. 547, C. A. Heskett, Mildred W. Wilson; Dept. 580-6, C. P. Plummer; Dept. 661-7, R. Sterner; Dept. 672-2, Michael Trbovich; Dept. 673-0, Rudolph Lopez; Dept. 715-0, D. E. Burkhart; Dept. 718-0, C. M. Maddox; Dept. 731-0, J. E. Lemon; Dept. 732-0, J. L. Ewings Jr.; Dept. 756-0, D. C. Martin; Dept. 759-0, S. S. Kieliszek; Dept. 835-1, W. E. Dent; Dept. 987-5, C. H. McLeod.

### ALTUS AFB

Ten-year: Dept. 391-0, R. M. Leger.

## Papers Presented

The following GD/Astro employees presented papers at the Vehicle Design and Propulsion Meeting, Wright-Patterson AFB, Nov. 4-6.

BITHELL—R., with PLAGE, Gordon, and WOODREY, R. W., all Dept. 580-6. "A staging study for a two-stage air-breathing booster system."

BREUER—F. D., Dept. 580-6. "Aerodynamic considerations in configuration design of an aerospace-type vehicle."

BREUER—F. D., with BITHELL, R. A., both Dept. 580-6. "Airframe-propulsion system integration for aerospace-type vehicles."

COWARD—K. S., Dept. 580-6. "Aircraft design and operation as limited by sonic booms."

BRYANT—Elwood, Dept. 200. "Industry views the modern logistics problem," AIAA/ASME/SAE Conference, Anaheim, Calif., Nov. 8.

GEISERT—R. E., Dept. 592-1. "Corrosion problems and their control at Atlas missile bases," Surface Preservation Section, American Ordnance Association, Vandenberg AFB, Nov. 5-6.

HURLICH—Abe, Dept. 592-1. "Selection of materials for use at low temperatures," Conference on New Trends in Materials, Chemical Engineering and Battelle Memorial Institute, Columbus, Ohio, Oct. 31-Nov. 1.

McGUIRE—T. V., Dept. 158-1. "APHLO—A flow charting program," Users of Automatic Information Display Equipment, Miami Beach, Fla., Oct. 16.

WEINBAUM—B., Dept. 549-3. "Modern weapon and space system compatibility considerations," Society of Electrical Engineers, University of California, Nov. 6.

## Births

HASELDEN—Daughter, Christina Marie, 7 lbs., 7 oz., born Sept. 9 to Mr. and Mrs. W. A. Haselden Jr., Dept. 780-2.

## Retirements

GREGORY—F. W., Dept. 220-2. Seniority date, Aug. 11, 1950. Retired Nov. 1.

NEILSON—W. A., Dept. 526-2. Seniority date, Dec. 26, 1947. Retired Nov. 1.

PACKARD—A. B., Dept. 576-3. Seniority date, June 4, 1958. Retired Nov. 1.

WAIT—Richard, Dept. 130-1. Seniority date, Nov. 1, 1948. Retired Nov. 1.

## Personals

Thank you for every expression of kindness shown me by everyone associated with the company. It is deeply felt when one loses a loved one, William Bulmahn, Dept. 452.

Mrs. Irene Bulmahn

My sincere thanks to my many Astro friends for their thoughtfulness and help at the recent loss of my daughter, Joyce Connert.

LaFerrie Ferreira, Dept. 832-1

## 225 Pints of Blood Goal of Operations

Operations department personnel will contribute to GD/Astro's credit with San Diego Blood Bank during collections Dec. 18.

Drive solicitations begin via supervision on Nov. 18, with prospective donors asked to register promptly to expedite return of the cards to employee services by Nov. 27.

Last year, operations personnel contributed 229 pints of blood, topping by a narrow margin this year's goal of 225 pints.

## McGaw Will Direct Ads and Promotion

W. H. McGaw Jr. has been named project administrator for advertising and promotion at General Dynamics/Astronautics by C. T. Newton, director of communication.

He replaces R. B. Salzberg who has left the company.

McGaw has been with GD/Astro for three years, and prior to his new assignment was in charge of presentations. He also served as producer-director in motion pictures and television (Dept. 124).

Earlier, McGaw was executive producer for Station KDKA-TV, Pittsburgh, Pa., and director for National Broadcasting Company in Cleveland, Ohio.

He has studied at Rollins College, Fla., and at Royal Academy of Dramatic Arts, London.



W. H. McGaw

## New Systems Dept. Created at Astro

(Continued from Page 1)

design, development, program planning, business analysis, and coordination with government agencies and associate contractors.

"This consolidation places all aspects of our search for new business under a single arm of senior management," Dempsey explained. "We believe this arrangement will strengthen our ability to compete successfully in a highly technological market."

Both Patterson and Dore are aerospace veterans. Patterson joined General Dynamics in 1946 and Dore a year later, and both were associated with Atlas in key positions from the earliest days of its development.

## Traveler to Show So. America Slides

Dr. Peter Bancroft will be guest speaker at a meeting of ARA Rockhound Club at 7:30 p.m., tonight in ARA Clubhouse.

He will discuss mineral collecting expeditions into the interior of South America, illustrating his remarks with colored slides and showing a display of Brazilian crystal.

## Deaths

LYNAS—Raymond, Dept. 714. Died Nov. 4. Survived by wife, Gladys, adult son.

TYRE—Albert P., Dept. 365-1. Died Nov. 2. Survived by wife, Erlene Priscilla, son and daughter.



VISITING—Con-Trib-Club board members J. R. "Bob" King (striped jacket) and Don Glasser (plain jacket) recently visited Clairemont Boys Club, which receives major support from United Community Services as part of Boys' Clubs of San Diego. Showing them around is Don Bonatus, branch director.

## Give Your 'Fair Share' Con-Trib Plea as Annual Drive Starts

(Continued from Page 1)

earnings from the company.

Why Con-Trib-Club?

Obvious advantages are that of "giving once for all"; that donations are deductible for income tax purposes; that members receive identifying window stickers recognized by most solicitors.

More importantly, Con-Trib is a major source of support for the 75-plus United Community Services agencies, and many other non-UCS organizations which annually serve thousands of San Diegans.

Last year 232 GD/Astro families received assistance from Con-Trib's Emergency Aid Fund to meet financial emergencies beyond other reasonable means of solution. These Emergency Aid grants were gifts: no repayment is expected.

Of the \$520,000 sought in this year's campaign, \$400,000 is planned for disbursement to UCS, \$52,000 for Emergency Aid, and \$68,000 for non-UCS agencies.

In addition to the total goal, individual targets have been set for major GD/Astro departments, whose progress toward these marks will be charted during the course of the drive on posters throughout all San Diego area plants.

Progress toward the campaign total will be indicated on an enormous "thermometer" to be erected

## Visitors Are Invited To Try Telescope

ARA Astronomy Club will open an observation program for GD/Astro employees and their families Friday (Nov. 15) with the theme "Above San Diego."

The program, in which visitors will be invited to use the 8-inch reflector telescope now mounted in the club observatory at the east side of the recreation area, will continue each Friday, 8 to 10:30 p.m., through March 20.

Under direction of a club member, the clock-driven telescope will be trained on such celestial phenomena as the planets, moon, galaxies, nebulae, etc.

Additional information on "Above San Diego" is available from Bob Roberts, main plant ext. 1124.

## Management Expert Will Address Club

Dr. Herbert True, a leading authority on management techniques, will be featured speaker at the meeting of General Dynamics/Astronautics Management Club Nov. 27 in Caribbean Room, El Cortez Hotel.

Electronic programs under S. L. Ackerman, vice president and program director, is sponsoring department. Dinner will be served at 6:30 p.m., preceded by a social hour at 5:30.

Tickets at \$3 are available from Management Club Boosters throughout GD/Astro facilities.

## Astro Complies With MILSTAMP

A new documentation technique for shipments to or through armed forces depot or transportation systems went into effect Oct. 1 and General Dynamics/Astronautics was one of the few military contractors who could comply promptly.

The system is called MILSTAMP (military standard transportation and movement procedures) and it was Phase I that was effective world-wide last month.

A long standing record of customer-contractor teamwork made Astro's compliance possible.

Affected was Astro's traffic department under J. N. McPheeters, chief of stores and traffic, reporting to R. E. Poling, material operations manager. The department, headed by General Supervisor C. J. Stafford and J. W. Higgins, supervisor, has had long experience with Air Force customs. In fact, since 1958 when the Air Force turned its military traffic offices at most major plants over to industry on a contract basis, the department has been responsible not only for regular company traffic duties, but also for issuing and controlling bills of lading, verifying compliance with government shipping regulations, and routing on behalf of the Air Force.

Assistance in this area came from S. E. Johnson, Air Force traffic manager, who reported to the Air Force Plant Representative's Office in July, 1958.

Close-knit association between Johnson, AFPRO and the GD/Astro traffic was the basis on which many mutual traffic problems have been resolved—notably during the Atlas base activation effort when high priority material flowing to and from San Diego reached a peak.

This teamwork paid off again in implementing MILSTAMP (Phase I).

In less than a year it will be put to the test again, when the Department of Defense puts MILSTAMP Phase II (mandatory use of the new documentation on all government material shipped from a contractor plant) into effect on Oct. 1, 1964.

## Value Engineering Teams Win Praise

(Continued from Page 1)

took part in the seminar had demonstrated for themselves the worth of value engineering thinking on hardware projects. He urged them to apply the same philosophy to non-hardware tasks.

"The real payoff of this seminar will come when you return to your jobs, use value engineering principles as part of those jobs, and disseminate that kind of thinking to those around you," he said.

The seminar was coordinated by Everett Lindem of educational services (Dept. 130-3) within the framework of GD/Astro's value control organization under E. D. Heller, manager of cost reduction and value control.



VALUE SPIRAL—Staff and graduates of GD/Astro's second value engineering seminar are pictured on spiral staircase in main plant's Bldg. 2 lobby after completing final informal presentation of project recommendations to management.

## General Dynamics NEWS

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GD/Electronics (San Diego) news contact: Helen Wood, 298-4641, ext. 1377, Plant 1, Bldg. 51.

Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth 1, Texas. Telephone PERshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

Pomona Editorial Offices, Room 106-D, Bldg. 1, GD/Pomona, Mail Zone 3-3, P.O. Box 1011, Pomona, Calif. Telephone, NAtional 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor; Carol Sowers. Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone Lone Star, Texas, 2211, ext. 424.

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, Hubbard 2-2200, ext. 2555. Norman Howden, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, Hilltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.



# High 'People Capability' Seen as Dynamics Goal

Today's jobs require greater ability, more know-how and more efficiency than the same jobs ten years ago, and the trend is likely to continue, Algie A. Hendrix, General Dynamics vice president-industrial relations, told conferees in Washington, D. C., last month.



A. A. Hendrix

He was speaking before the Department of the Navy's Industrial Relations Institute, specifically on "Industrial Relations Responsibilities and Opportunities."

Hendrix strongly emphasized the need for individuals to face the challenge of change and adapt to new demands as essential to their careers as well as advancement. He defined the General Dynamics Corporate goal as "building and maintaining a lean and effective organization with a recognition of, and a fast response to, our customers' needs." For the industrial relations organizations he narrowed this down to the goal "to establish, preserve, develop, challenge and retain the highest possible level of 'people' capability."

"People, money, machines and facilities obviously make up the assets of any enterprise," he con-

tinued. "In General Dynamics 'people assets' (cohesive units of managerial and technical know-how) are our most important asset."

Regarding the need for versatile and adaptable personnel, Hendrix called attention to the great fluctuations (expansion and contraction) of industrial employment over the years.

"In periods of rapid expansion we must have promotable people for higher level jobs; in periods of contraction we need people capable of assuming a combination of duties."

Asked to comment particularly on the labor relations aspects of industrial relations, Hendrix reported that although General Dynamics deals with 33 different unions and operates under 158 individual union agreements, only 181 man-days have been lost in 1963 due to strikes.

"I feel this indicates a good job on the part of management, including supervision, the union representatives and the employees of General Dynamics."

"We strive for labor peace," he said, "but at the same time recognize that there are some things worse than a strike . . . We go all out to protect the responsibility and right to manage the business and be competitive at the market place. We believe this to be essential in meeting our responsibilities to our employees, our customers and our shareowners."

## Two Transfer GD/FW to New York

(Continued from Page 1)

law degree from the National University School of Law in Washington, D. C. He also holds a master of industrial and labor relations degree from Cornell University.

Oles was admitted to the District of Columbia Bar in 1951 and was in private practice in Washington, D. C., for two-and-a-half years.

He served in the U. S. Navy from March 1943 to September 1946.

Wiseman joined GD/Fort Worth as assistant superintendent in 1956. He subsequently served as superintendent, industrial engineer, and project industrial engineer. In 1960 he was promoted to assistant factory manager.

Prior to joining GD/FW, Wiseman served in the factory departments at Boeing, Wichita. From 1951 through 1956 he served as General Superintendent of the Ford Aircraft plant in Kansas City, Mo. He served in the U. S. Army from 1944 through 1946.

★ ★ ★ Daniel L. Martin has joined the staff of the General Dynamics vice president and chief counsel as assistant counsel, reporting to Roger I. Harris.

Martin, a 1950 graduate of Rutgers University, who received his law degree from University of Michigan in 1955, served as a lieutenant and radar observer in the Strategic Air Command prior to association with a New York City law firm for the last eight years.

★ ★ ★ James N. Sowers has joined the Corporate comptroller's department as a cost analyst, reporting to R. C. O'Sullivan.

A former captain in the Air Force and graduate of the University of Michigan, Sowers has held industrial engineering positions in Ford Motor Co., was with American Airlines as assistant vice president, and technical services and assistant comptroller, and most recently was vice president of manufacturing services for Henry Golightly and Co., management consultants.

## BUSINESS BACKLOG INCREASES, INCOME ALSO SHOWING RISE

(Continued from Page 1)

at Fort Worth). Non-stop, the B-58 with three-man crew covered the distance in eight hours, 35 minutes, cutting the previous record in half. It was the longest supersonic flight on record.

Successful first firing of Little Joe II, built by Convair division, also was recalled in the report as well as the recovery of Electro Dynamic division after fire destroyed its Bayonne, N.J., plant. The division now is back in active production at Avenel, N.J. Electro Dynamic builds high precision motors and generator sets and recently added the Dynapak line of high velocity metal forming equipment (previously produced by Advanced Products department) and the line of vaneaxial fans (previously produced by Electric Boat division) to its activities.

The report also calls attention to the all-terrain, all-weather CL-91 vehicle developed by Canadair Limited, currently undergoing testing by the U.S. Army. (See photo at lower right.)

## Second Centaur Pad Authorized

Specific contract details for completion of a second Centaur launch pad at Cape Canaveral were announced recently by National Aeronautics and Space Administration's Lewis Research Center.

The \$14,451,485 contract held by General Dynamics/Astronautics covers activation of the facility, Pad 36B.

By adding a second pad in addition to the original 36A, Pad 36B will provide "double-barrelled" capability for the Cape's Centaur launch installation, Complex 36.

The new facility includes a service tower, propellant storage tanks and transfer lines, and electrical systems to test and activate the vehicle, fuel it by remote control, and launch it.

A common control center serves both pads. With completion of 36B, Centaur vehicles can be launched alternately from the two pads.

## Walter Williams Gets Key NASA Post

Dr. Walter C. Williams, who managed operational phases of Project Mercury for National Aeronautics and Space Administration, has been named NASA's operations director for all manned space flight missions.

Appointed to the post of deputy associate administrator for manned space flight operations at NASA Headquarters, Washington, D. C., Dr. Williams was formerly deputy director for mission requirements and flight operations at NASA Manned Spacecraft Center, Houston, Texas.

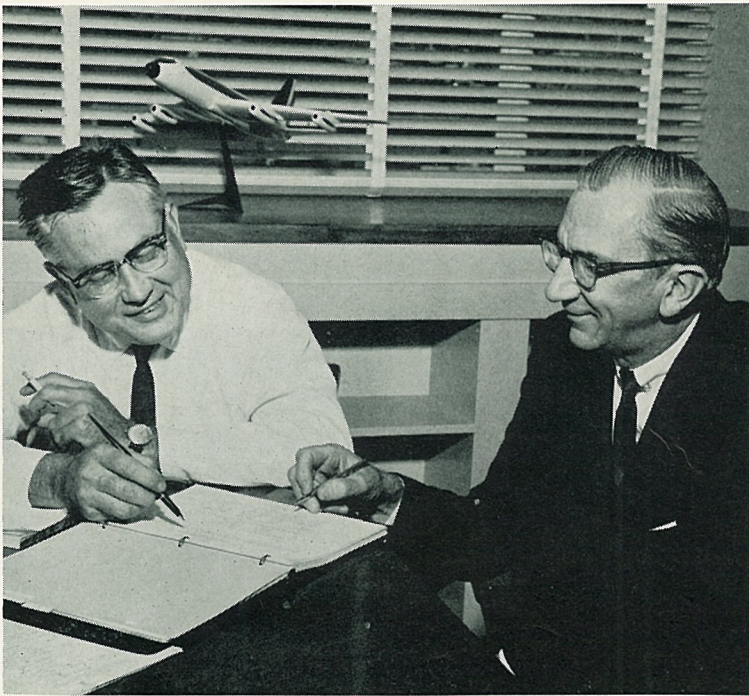
The new position was created as result of increasing complexity of NASA's manned space flight projects. It provides a key man to direct operations of the many organizations and installations throughout the U. S. and the world which contribute to the conduct of a flight mission.

Dr. Williams will have full authority and responsibility for conduct of the flights, with all NASA, Department of Defense, and other teams participating, reporting to him for direction.

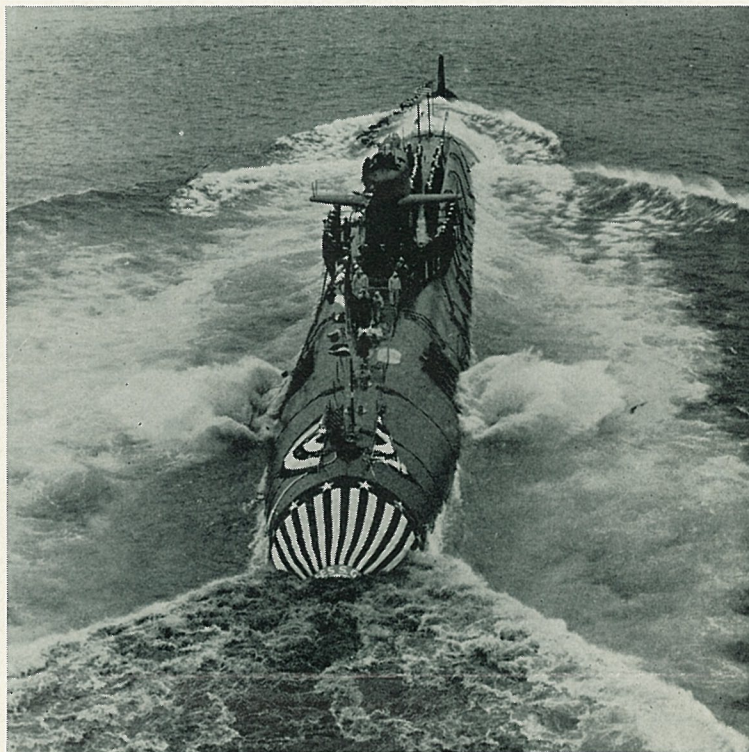
## B-58 Leads Air Show Opening Fund Drive

A B-58 streaked across the Palmdale Air Force plant near Edwards AFB, Calif., last Saturday (Nov. 9) to open the Air Force-Community salute to the Antelope Valley United Fund drive.

The Edwards' based B-58, built at GD's Fort Worth Division, triggered the two-hour air show by a maximum performance climb.



COAST CONFERENCE — E. H. Heinemann, right, General Dynamics vice president — program development, was on the West Coast recently for conferences, which included talks with Charles Frick, GD/Convair vice president-engineering, left.



MAIDEN DIP—Ulysses S. Grant, Navy's 25th Polaris-firing submarine, churns water of Thames River during launching Nov. 2 at General Dynamics/Electric Boat, Groton, Conn. Vessel is 425 feet long and displaces 7,000 tons.



CANADAIR PRODUCTS — In top photo, Canadair Limited employees watch as first of 190 Canadair CL-41A jet trainers is officially named "Tutor" by Mrs. C. R. Dunlap, wife of Air Marshal Dunlap, Chief of Air Staff of RCAF. In lower photo is CL-91, all-terrain, all-weather vehicle developed by Canadair, currently under test by U.S. Army as personnel carrier.



"I don't believe we've met."

ORMAN



## 'Inside Look' At Border City Set For Nov. 23

Seldom-seen sights and little-known facts of Tijuana, Mexico, will be highlighted in a special tour of the neighboring Mexican city Saturday, Nov. 23.

The 12-hour sightseeing trip is arranged and conducted for General Dynamics people by James Hardison of GD/Convair Dept. 15.

It will take visitors off the beaten tourist trail and into the "real" sections of town. The route will take the chartered bus through the best residential areas, the commercial center of the city, to the Municipal Palace, headquarters of the city's government, and to such civic establishments as the Chamber of Commerce, post office, police department, national lottery, money exchange, new hospital.

Dinner will be served at the Tijuana Country Club. After watching jai alai at the Fronton Palace, the tour will wind up at a night club.

Cost of the entire trip, including transportation, dinner, all admission charges is \$11 each.

Tourists will meet at Balboa Park's Conference Bldg. at 1 p.m. and return there at 1 a.m. Cars will be parked there and a San Diego Transit bus taken to the border.

Reservations must be called in to Hardison by next Monday (Nov. 18) at his home phone, 276-5805.

## Garden Show Sets Record

Three participation records were shattered by the joint ARA-CRA Garden Club at its annual fall show in Balboa Park's Floral Association Bldg., Nov. 3.

Approximately 1,500 General Dynamics employees and park visitors viewed the show, open to the public between 1 and 6 p.m.

They saw a record number of total entries (418) in eight divisions, a record number of flower arrangements (49), and a record 176 rose entries. Corsage division attracted 12 entries, children's division, 9.

Best of Show awards went to Mr. and Mrs. T. J. Cunnion, GD/Convair Dept. 171, best button mums; Mr. and Mrs. E. L. Zimmerman, GD/Convair Dept. 401, best bloom in show; Mr. and Mrs. C. H. Splinter, GD/Astro Dept. 759, best daisy-type mums; Phyllis Files, GD/Astro Dept. 953, best corsage; Esther Barksdale, GD/Astro Dept. 015, best arrangement; W. D. Spann, GD/Astro Dept. 953, best rose; and Gary Volper, son of J. R. Volper, GD/Astro Dept. 661, best child's entry.

Best of Show winners received turkeys. In each class, first place winners were given garden hose; second place, insecticide spray; third place, a flower vase.

First place honors went to: GD/Convair's Stella Dennis, Henry Boyd, Grace Zimmerman, LaVonne Splinter, Mrs. F. White, F. White, E. L. Zimmerman, Mrs. Henry Boyd, Dennis Zimmerman.

GD/Astro's Arnold Carroll, Gale Short, C. H. Splinter, Phyllis Files, T. J. Cunnion, Ona Mae Carroll, Esther Barksdale, Carlene Boychuck, Mrs. Hershel Young, Andrew Volper, W. D. Spann, C. J. Lewis, J. E. Henderson.

## Cafeterias to Serve \$1 Turkey Dinner

One dollar will buy a big turkey dinner at Astro and Convair cafeterias the Tuesday before Thanksgiving, Nov. 26.

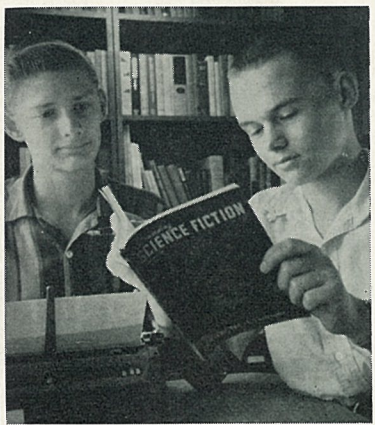
The special dinner will be served during lunch periods at cafeterias at Plant 1, Plant 19, Plant 71, and Pacific Hwy. locations, all operated by the Prophet Co.

Roast turkey and dressing will be the entree. Other menu items are whipped potatoes, giblet gravy, tossed green salad, buttered peas, roll and butter, pumpkin or mince pie, choice of beverage—and all for \$1.

## Saturday Schedule For Salvage Set

Saturday schedule for employee sales at GD/Convair and GD/Astronautics salvage yards at Plant 1 and Plant 71, respectively, is:

GD/Astro—Nov. 16, 30.  
GD/Convair—Nov. 23, Dec. 7.  
Sales hours are from 8 a.m. until noon.



**PUBLISHERS**—GD/Astro sons, Dean Sandin (left) and Bob Franson, both 17, evaluate piles of science fiction books and magazines for their new Science Fiction Review.

## YOUNG PUBLISHERS START REVIEW

Two General Dynamics sons have launched a new publication, pointed directly to the many science fiction fans throughout the country.

Bob Franson, son of W. R. Franson of GD/Astro Dept. 140-3, and Dean Sandin, whose father, D. H. Sandin, is in GD/Astro Dept. 480-0, have established themselves as publishers of the Science Fiction Review.

In their professional-appearing four-page publication, issued every other week, the 17-year-old editors list and review the latest science fiction paperbacks and magazines. For their material they read more than 20 books a month sent to them by publishers in advance of newsstand release.

They already have a nationwide paid circulation of over 100 and hope to boost the subscription list to 1,000 by the end of the year.

Both boys are honor students in their senior year at Hoover High School and have qualified as National Merit Scholarship semi-finalists.

## Discounts Extended For Skating Club

The joint ARA-CRA Ice Skating Club has arranged for extension of discount tickets at Mission Valley Ice Plaza through November.

Tickets are available only at employee services outlets, and entitle the bearer to a 25 cent discount at any skating session. When used at club sessions (each Thursday, 6:30 p.m.) they result in a total 35 cent saving, including the regular 10-cent discount for the private session.

No skating session will be held on Thanksgiving (Nov. 28).

More information on the club is available from President Barbara Gilliland, GD/Astro ext. 4041.

## Joint Camera Club Sponsoring Contest

The joint ARA-CRA Camera Club will conduct its fourth quarterly contest of the year at its meeting, 7:30 p.m., Nov. 17 in Balboa Park's Photo Arts Bldg.

Members have been invited to enter four black and white prints or color transparencies. Slides and movies will be shown by members.

## FENCING TOURNEY TO START NOV. 23

San Diego Fencers, to which several General Dynamics fencing enthusiasts belong, will host a men's and women's tournament, starting at noon, Nov. 23, in ARA Clubhouse auditorium.

## Snow Ski Club Seeks Members

ARA Snow Ski Club has launched a vigorous campaign to interest GD/Astro folk in their sport.

Newcomers will be given a special welcome at club meetings at 7:30 p.m., the first Wednesday of each month in ARA Clubhouse, and have been invited to participate in the group's "instruction trip" to Big Bear, Dec. 6, 7, 8.

President Charlie Hill said beginners can rent all required equipment either in San Diego or at Big Bear. Car pools and discounts on lessons and lift fees ease the financial strain.

Potential "snow bunnies" are urged to contact Hill, ext. 2745, or Vern Norris, ext. 3983, for more information on the sport.

## ARA Cage Team To Play Frosh

From workouts to "warfare" is the word this month for ARA's representative basketball team.

Since early October the cagers have been drilling under direction of Hank Fuller, coach. Friday night (Nov. 15) they tangle with the San Diego State Frosh in a 6 p.m. game at State. Late this month they take part in the annual Muni Pre-Season Tournament at Balboa Park.

Archie Rambeau, ARA basketball commissioner, indicated this week that interest in the team has been high. In fact, so many players have responded that it may be possible to form a second team for a second league this fall.

## Lessons Scheduled For Novice Riders

Another series of riding lessons will be offered to GD/Astro folk at discount rates by ARA Riding Club, with classes for both beginning and intermediate riders scheduled.

Classes are conducted by the staff of Bonita Valley Farms at a cost of \$15 for eight lessons. Intermediate class opens at 9 a.m., Nov. 17, followed by beginners at 10 a.m. Those who have completed beginning instruction get a special rate of \$13 when they enroll as intermediates.

Application forms are available at employee services outlets, or call Mrs. William Penn, 283-6720.

At 2:30 p.m., Nov. 16, Junior Riders will meet to plan an entry in the El Cajon Mother Goose Parade.

## UAIDE Re-elects Dynamics Man To Head S-C 4020 Users' Group

H. E. Pietsch, GD/Astronautics research group engineer, was re-elected president of the UAIDE organization (Users of Automatic Information Display Equipment) at the Oct. 15-17 annual meeting, Miami Beach, Fla.

Second terms also went to K. Leon Montgomery, GD/Astro senior research engineer, secretary, and Marvin Hoffman of North American Aviation's Atomic International Division, vice president and program chairman.

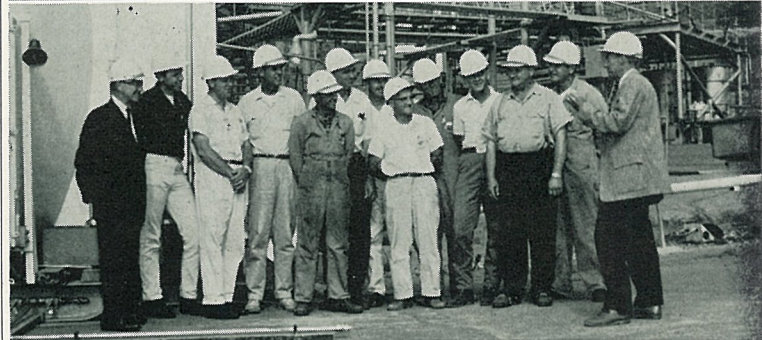
Seventy-five representatives from 43 different companies, government agencies, military installations, and educational institutions—all users of GD/Electronics-San Diego's S-C 4020 Microfilm Recorder—attended.

General Dynamics men presenting papers included Tom McGuire of GD/Astro whose topic was "APHLO—A Flow Charting

## Astro Wives Club To Meet For Lunch

GD/Astro Wives' Club will hold its monthly luncheon meeting at Valley Ho Restaurant, Mission Valley, Nov. 20.

Reservations may be made by calling Helen Johnston, 277-2308.



**COLLATERAL DUTY**—Cliff Mulligan, at left in top photo, is congratulated by Carl Rother as Safety Engineer Jim Cooper pins on badge marking Mulligan as head of Point Loma Fire/Disaster Team. Below is 11-man first shift team.

## White-Hatted Fire/Disaster Team Created at Pt. Loma

Safety, and a new triple-barrelled technique to insure it, are receiving added emphasis at Point Loma Test Site where much of General Dynamics/Astronautics space-age hardware receives exhaustive testing.

What's more, you don't need a program to identify the "players." You simply note the color of their safety helmets!

"Hard hats" worn by personnel regularly assigned to Point Loma are green. Visitors get yellow helmets. And, in every key location around the Point, someone wears a white hat.

A white helmet is the mark of a man with special emergency training: industrial security or fire department personnel, or a member of Point Loma's unique Fire/Disaster Team.

Cliff Mulligan, Dept. 756 assistant foreman, is Fire/Disaster Team chairman, with Assistant Foreman Stanley Pauchnick as second shift stand-in.

The 13-man team—11 on first

shift, two on second—consists of mechanics and technicians assigned to key work locations, and chosen because of specialized knowledge of pressurization, gases, electricity, etc.; then given further training in heavy rescue and fire fighting.

The team responds to any emergency situation and provides backup support for fire department personnel at Point Loma.

While the Fire/Disaster Team provides a "front line" unit if trouble occurs, an equally unique organization is also in operation to see that emergencies don't happen.

This is a nine-member Supervisory Safety Committee, also headed by Mulligan. Meeting monthly, this unit is comprised of supervisors for all departments operating at the Point—engineering, production control, engineering test support, maintenance.

With Safety Engineer J. H. Cooper providing specialized counsel and guidance, the group conducts general reviews of Point Loma safety procedures and tries to anticipate any special hazards which might arise from up-coming tests.

Installation of Point Loma's three-way safety program—a governing body to prevent accidents, a trouble-shooting unit should they occur, and a high-visibility system for spotting key personnel—was coordinated by GD/Astro safety section under J. W. Garrison, chief safety engineer. Personnel under Fire Chief A. C. Anderson provided intensive training for the Fire/Disaster Team.



**CONGRATULATIONS**—G. W. McGinley, GD/Electronics-SD manager industrial/commercial requirements, congratulates H. E. Pietsch of GD/Astronautics on re-election as UAIDE president. Other officers are Marvin Hoffman of North American Atomics International Division, vice president (at left), and K. Leon Montgomery of GD/Astro, secretary (far right).



## Sports & Recreation



**THATA WAY**—ARA Sports Car Club's E. N. Yeaton and Jean Stevens, wife of photographer Jack Stevens, demonstrate what's in store for participants in "Photorama V" Rally Nov. 24.

## 80-Mile All-Paved Route Chosen For Rally With Photos as Guides

San Diego County's biggest "fun" rally—Photorama V, sponsored by ARA Sports Car Club—will get under way from La Mesa Bowl at 10:01 a.m. Nov. 24.

Club officials emphasize that experience is not prerequisite to enjoying the event, which will take drivers over an 80-mile, all-paved route with a book of photographs as their only guide.

Nor is a sports car essential: nearly anything legally licensed to operate on the highways—"Detroit iron" included—is eligible for entry.

Photorama V is a rally, not a race, and will take about three hours to run at speeds well under

legal limits. Because of its unique nature, the novice driver and navigator can participate on an even footing with the "expert."

Awards will go to crews of the top ten cars, and all entries will receive dashboard plaques. Applications are available from E. N. Yeaton, main plant ext. 1504. Early entry fee is \$2.50, boosted to \$3 at the post.

## Partner Best Ball Slated

Starting times will be issued by Joyce at ARA headquarters, ext. 1111, between Nov. 25 and Dec. 4 for ARA Golf Club's next tournament at Circle "R" Dec. 8. The event will be a two-man best ball, gross and net.

Twenty golfers will collect Thanksgiving turkeys as a result of the club's previous tournament Nov. 2 and 3 at Fletcher Hills.

Top honors went to J. M. Maughmer who shot a net 63, followed by 64s from T. L. Lazos, and 65s by C. W. Meinson, J. W. Hooker and P. X. Bourgeois.

Shooting 67s were D. X. Scott, A. E. Holzman, C. N. Bagaloff, O. Y. Hasbrooke, while R. L. Leasure, P. A. Mattson, R. E. Stevens, D. X. Crayton, G. J. Bourke and H. H. Bodwell scored 68s.

Scores of 69 were tallied by R. R. Reekers, R. F. Cleary, G. P. Woods, E. I. Stuchly and R. V. Marlowe.

Winners received certificates for turkeys which are to be picked up at the recreation area concession stand Nov. 27.

## ARA Calendar

(GD/Astronautics Recreation association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111).

★ ★ ★

**ARCHERY**—Meeting 7:30 p.m., Nov. 14, ARA Clubhouse. Film: "B'wana Bowmen."

**ASTRO LENS**—Meets 7:30 p.m., Nov. 17, Photo Arts Bldg., Balboa Park, quarterly contest. Enter four slides or black and white prints.

**ASTRONOMY**—Observation program "Above San Diego," club observatory, ARA Area, each Friday, 7 to 10:30 p.m.

**ASTRO NOTES**—Each Monday, 7:30 p.m., ARA Clubhouse.

**ASTRO PLAYERS**—Business meeting, 7:30 p.m., today (Nov. 13), ARA Clubhouse.

**BADMINTON**—Turkey tournament, 1 p.m., Nov. 17, Federal Bldg., Balboa Park. Enter with Joyce, ext. 1111.

**GARDEN CLUB**—Christmas party, ARA Clubhouse, 7:30 p.m., Dec. 4.

**GOLF**—Tournament at Circle "R", Dec. 8. Starting times from Joyce, ext. 1111, Nov. 25-Dec. 4.

**GUN CLUB**—Pendleton trapshoot Nov. 17; Troy-type trapshoot Nov. 29, 7 p.m., both at Gil-Gillespie Field Range. Enter big game at employee services before Dec. 1 for annual drawing.

**PARADE**—See ARA's entry in El Cajon Mother Goose Parade, Nov. 24.

**RADIO**—Meeting 7:30 p.m., Nov. 13, ARA Clubhouse. October QSL cards will be tallied.

**RIDING**—Business meeting 8 p.m., Nov. 30; Junior Riders, 2 p.m., Nov. 16, both in ARA Clubhouse. Juniors will plan entry in Mother Goose Parade.

**ROCKHOUNDS**—Meeting 7:30 p.m., tonight (Nov. 13), ARA Clubhouse. Speaker: Dr. Peter Bancroft.

**SPORTS CARS**—Photorama V Rally, Nov. 24. Enter with E. N. Yeaton, ext. 1504.

**STAMPS**—Auction meeting, Nov. 14; trading session, Nov. 21, both 7:30 p.m., ARA Clubhouse.

**TEEN CLUB**—Dance, 7:30-11 p.m., Nov. 16, ARA Clubhouse. School clothes appropriate. Admission 25 cents.

**WIVES' CLUB**—Luncheon meeting, Nov. 20, Valley Ho Restaurant. Social hour, 11:30 a.m., luncheon, 12:30. Reservations: Helen Johnston, 277-2308.

## Baseball Team Leads League

Astro's baseball team is undefeated in San Diego semi-pro "American League" play, having dumped a Ryan team, 5-4, and topped San Diego City College "Cardinals," 2-1.

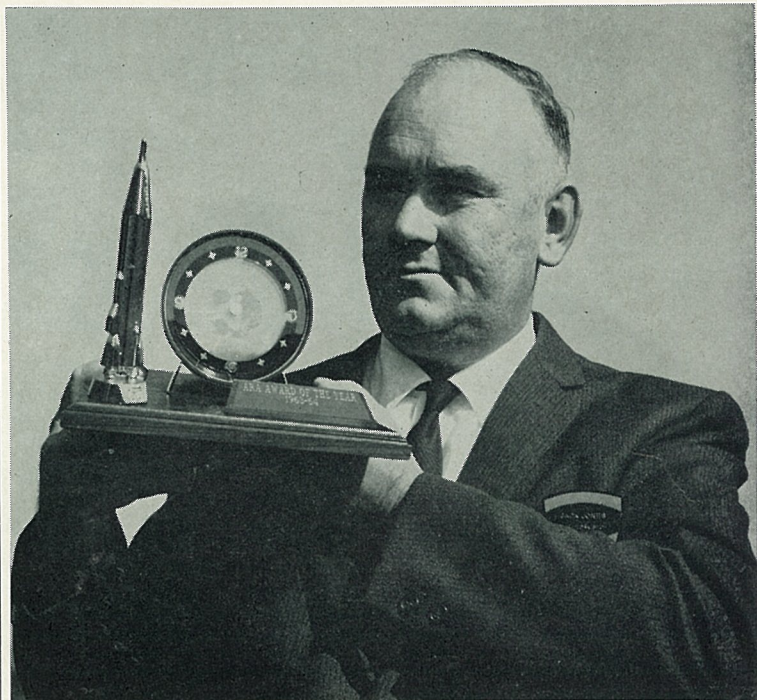
Other teams competing for the winter league crown are El Cajon and San Diego Police Department. Play has added flavor since each team may field up to seven professionals. Games get under way at 1 p.m., Sundays, and spectators are admitted without charge.

Astro met El Cajon last Sunday, and will face San Diego Police, Nov. 17 at Golden Hill; Ryan, Nov. 24 at Robb Field; Cardinals, Dec. 8 at Golden Hill; El Cajon, Dec. 15 at Wells Park in El Cajon; and Police, Jan. 5 at Golden Hill.

## Schindler Is Winner In Pistol Matches

Al Schindler scored 294 of a possible 300 points to win master class in an ARA Pistol Club match held Oct. 27 at San Diego Police Pistol Range. Roscoe Anderson was in second place with 291.

Top scorers in expert category were Bill Givens (281) and Warren Ranscht (277), while Les Vivian scored 259 and Carl Jensen, 256, in the sharpshooter bracket.



**SPECIAL HONORS**—Jack Jones (Dept. 756) shows off Astronautics Recreation Association "Award of Year" presented him late last month. Award recognizes outstanding service to recreation. Jones is commissioner of Hi-Fi Workshop and long-time leader in developing ARA Area.

## ARA 'Award of Year' Goes to Jack Jones

Jack Jones (Dept. 756) last month received Astronautics Recreation Association's "Award of the Year."

This award, presented annually, recognizes outstanding contributions to ARA. Any ARA member is eligible and members of ARA Employees' Council select the final winner in a secret ballot.

Other candidates for the award this year were Charles "Chuck" Ogle and Ben La Chance.

Jones has been a member of the ARA Council for two years

and is currently commissioner of the Hi-Fi Workshop, a group he was instrumental in organizing.

A 12-year General Dynamics' veteran, Jones has been a key volunteer leader in the entire development of the ARA Recreation Area. His department was responsible for construction of the entire north wing of ARA Clubhouse, as well as other projects. Jones was a key member of the group planning and erecting the Atlas missile display.

Dick Mitchell, chief of employee services, presented the award to Jones at the annual Council-supervisor dinner.

This is the fifth award of its type presented. Previous winners included Ezra Johnson, Bryan Weickersheimer, Gil Hutter and Marty Stutz.

## 'Rocket Ride-Space Platform' Planned For Atlas Launcher

Two winners have been announced in ARA's contest for suggestions on how to convert a surplus Atlas missile launcher into children's play equipment.

After consideration of safety, engineering and costs, factors involved, the committee settled on an idea combining two of several proposals submitted.

Sharing honors for the final design are L. O. Holden, Dept. 373-3, and Merle T. Lien, Dept. 558-5.

Holden had submitted an idea for turning the launcher into a "Rocket Ride," while Lien suggested a space platform.

Selection committee was chaired by J. J. Fromlath, with Maynard Bjorstrom, H. E. Benjamin, T. L. DeBaca and Joe Merk, all Dept. 759; R. D. Gallagher and L. R. Warren, Dept. 290; M. W. Pethbridge, Dept. 146; Ray Mendoza and Bill Harwood, Dept. 130.

## Badminton Tourney To Be All Doubles

ARA Badminton Club will sponsor its annual Turkey Tournament at 1 p.m., Nov. 17 in Balboa Park's Federal Bldg., with all GD/Astro employees and dependents eligible to enter free.

The meet is an all-doubles event, men's, women's, and mixed. Turkeys will be awarded on a handicap basis, with special awards going to top teams.

Prospective participants have been asked to call Joyce, ext. 1111, to enter.

## Novel Float Carries ARA Hopes In Parade

ARA's float entry for El Cajon's Mother Goose Parade Nov. 24 is nearing completion with a score of Astro folk determined to retain the sweepstakes trophy ARA won last year.

This year's float has a "Hickory Dickory Dock" theme and is fully animated. ARA's "band-organ" concealed inside provides appropriate music.

## Astro Tigers Win Bowling

The Plant Engineering Tigers, an Astronautics Management Club-sponsored keg team, walked off with top team honors in the men's division of the annual San Diego Industrial Recreation Council tournament.

The event was held Nov. 2-3 at Pacific Recreation.

Captain Bill Timm's Tigers rolled a 2,777 three-game series with Timm leading the way with a 557 series. Other team members included Ronnie Moll, Jake Moore, Mel Shaffer and Jack Aiken.

The "Ifs" captained by Larry Atwell of Astro placed fifth.

In the mixed team events the Astro "No Doubts" captained by Henry Cowell came in second. Beverly Smith, wife of I. S. Smith, turned in a 212 game for this team which was also tops for all women entered.

Astro had 22 teams entered in the tournament.

Award presentations were made over the past weekend at a dinner at the El Morocco.

## Astro Hunters Bag Deer on Utah Trip

Results of two big game contests are being awaited by G. C. Swaim, GD/Astro Dept. 452, who entered the buck he bagged on a recent hunting trip with three Astro companions.

Tally varies, dependent upon the counting system used, but Swaim claims a 17-point total, with 13 qualifying under the "inch-and-a-half" rule of one contest.

Joining Swaim—and getting their deer—on the trip to Monroe Mountain, Utah, were R. E. Kangas, J. C. Knorr and W. A. Shoemaker, all Dept. 452.



**COSTUME PARTY**—Astro Nauts had a ball at annual Halloween party in ARA Clubhouse. Randy Lowenstein, left, won prize for costume as forgetful gentleman. He is dancing with sister Sandy (Indian maiden) while father, Joe Lowenstein (Popeye) is at right. In background are Mr. and Mrs. Dick Mendenhall.—Photo by J. F. Jones, Dept. 661-7.





**BRUSSELS MEETING**—Recent visit of GD/Astronautics Technical Director K. J. Bossart to his native Belgium included meeting shown here with U. S. Ambassador, Hon. Douglas MacArthur II. Pictured, from left, are Charles W. Tuck, General Dynamics European representative—military programs, Robert G. Hyde, General Dynamics director, military programs—Europe, Bossart, Mrs. Bossart, MacArthur. —United States Information Service Photo.

## GD/FW Value Graduates Now Over 1,000 Mark

General Dynamics/Fort Worth last week graduated the 1,000th person from a full-fledged value engineering seminar.

Col. Art Powers, who heads up the Department of Defense's far-flung value engineering efforts, received the 1,000th diploma—a specially engraved one—from President Frank W. Davis.

Colonel Powers, director of productivity and value engineering, office of DOD, lauded the "cost-conscious attitude" of GD/Fort Worth people and called the seminar "very profitable."

A. R. Tocco, national president of the Society of American Value Engineers, wired congratulations to GD/Fort Worth for its "excellent in-house training program."

"I can recall participating in your first seminar a few years back . . . and have watched your progress with interest and admiration," he wrote.

A total of 43 attended the 25th seminar, held Oct. 21 through Nov. 1. This brought the total of graduates of two-week seminars to 1,012.

"Other corporations as a whole may have graduated more employees," said Rand Creasy, deputy value engineering coordinator. "But GD/Fort Worth is the first single division to put this many through a comprehensive program of this sort."

Potential savings of 43 per cent over proposed costs resulted from the 25th seminar, which included four F-111 projects and two B-58 projects applicable to the F-111 effort.

One F-111 project involved replacing proposed ingress ladders with AD4 surplus ladders, which would be cheaper and about 70 pounds lighter. Less expensive electrical connectors, chart holders and adapter engine support were also value-engineered.

A 55 per cent saving would result from using a new rubber-covered, U-shaped part as cover assembly on the B-58 antenna. In addition to cutting cost, the new part would provide more safety for Hustler maintenance men.

President Davis opened and closed the seminar with brief

speeches. Col. Max W. Boyer discussed "The Customer's View of Value Engineering." Conference leaders included Bill Nutt, C. W. Doyle, R. D. A. Russell, J. W. Shaffer, J. R. Slack, J. W. Childress and Creasy.

## Famme Will Speak At Industry Night

GD/Convair programs will be discussed by President J. H. Famme and two other division executives at "Convair Industry Night" sponsored by the San Diego Section, American Institute of Aeronautics and Astronautics, at a Nov. 22 dinner meeting.

Famme will outline future activities. W. W. Fox, director of engineering, will explain current research and development programs and J. B. Hurt will talk about the Little Joe II launch vehicle program for which he is manager.

The meeting will be held in Del Webb's OceanHouse with social hour at 6 p.m.; dinner at 7; program at 8 p.m. Tickets are \$4 and wives are invited.

## Engineering Exam Filing Deadline Near

Filing deadline for April 1964 California examinations for professional licenses in electrical or mechanical engineering is Dec. 1, with classes to prepare for the exams opening in January at University of California Extension.

Eligible to take exams are engineers holding valid certification of "in-training" status, or who meet certain combined qualifications of education, experience or age.

Additional information is available from the Board of Registration for Civil and Professional Engineers, 232-4361; University of California Extension, 232-7321; E. A. Hamilton, ext. 1166, or C. G. Erickson, ext. 2511 at GD/Astro main plant; R. K. Walter, ext. 1646, or R. M. Kuhns, ext. 2693 at Plant 1.

## GD/E Installs New Machine

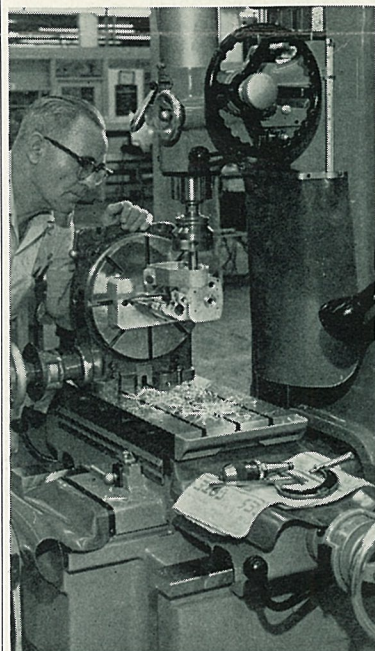
Fabrication capabilities of General Dynamics/Electronics—San Diego have been increased with the installation of a high precision machine in Bldg. 4, Plant 1, machine shop the end of last month.

The Moore No. 3 precision jig bore will be used for precision boring of gear boxes for REINS radar assemblies, said L. F. Kruse, general foreman of GD/E fabrication.

It can do accurate boring at tolerances as close as .00005.

The new equipment was constructed by Moore Special Tool Co., Inc., at Bridgeport, Conn., and has been on order for almost a year. Its approximate cost is \$20,000.

The new machine was installed in GD/E's machine shop area of fabrication under supervision of W. J. Squance, assistant foreman.



**NEW MACHINE**—Herb Simpson operates new precision jig bore installed in GD/Electronics machine shop at Plant 1. Close tolerance machine is used for high precision work on components for electronic assemblies.

## Astro Man Completes Navy Space Seminar

R. D. Tuttle (Cdr., USNR), GD/Astro Dept. 316, has just completed active training duty at Treasure Island, attending a space science seminar sponsored by Office of Naval Research.

He is a member of U.S. Naval Research Reserve Unit 11-5, drilling weekly in San Diego. Interested Naval Reserve officers among GD/Astro personnel have been invited to contact Tuttle, Plant 1 ext. 768, for more information.

## GD/FW MAN SPEAKS AT CAMPUS BANQUET

C. E. Nevitt of GD/Fort Worth educational services was featured speaker at Delta Sigma Pi's "Founder's Day Banquet" Nov. 2 on the campus at Texas Christian University. He spoke on "Preparation for the Space Age."

## By Incentive Contract, Astro Earnings Depend On Atlas Performance

In an unprecedented contract agreement signed last month with the Air Force Space Systems Division, General Dynamics/Astronautics staked its fee for Atlas space launch vehicles on flight performance.

Under terms of the unique incentive arrangement, GD/Astro's earnings on the original multi-million-dollar contract for design, development and launch of standardized space launch vehicles (SLV-3) can vary by several million dollars.

Fee bonuses can be earned separately for cost, countdown and flight performance.

"Key to the contract is our willingness to risk the incentive fees on the reliability of our product," said C. S. Ames, vice president and SLV program director. "We are confident we can perform within the cost and reliability ranges agreed to, and in

so doing make valuable savings to the government."

The contract's launch performance incentive portion includes two divisions.

The first—countdown—begins with GD/Astro's initiation of the countdown procedure and continues until the vehicle achieves two-inch liftoff from the launch pad.

The second—flight—continues from the time the vehicle is two inches off the pad, until successful conclusion of the Atlas portion of the mission.

Fee bonus or penalty is applied when percentage of success is above or below a target figure, with determination of success, failure, or no-trial (premature completion of countdown or flight due to circumstances beyond GD/Astro's control) to be made by the Air Force.

First Atlas SLV-3 is scheduled for delivery in early 1964.

## Ethics Is Keystone of Business, Davis Tells NMA Convention

The increasing number of managers from specialized professional ranks need ways and means to keep up with their specialty and at the same time develop managerial techniques.

Frank W. Davis, GD/Fort Worth president, issued this challenge to delegates at National Management Association's annual convention in Cincinnati recently.

He was featured speaker at the awards luncheon, at which GD/Fort Worth received a trophy as "No. 1 Company Club" in the nation.

"A prerequisite for achieving supervisory status in engineering or research is superior technical capability which will command the respect of peers and subordinates," Davis said.

"Continued learning is the lifeblood of professional growth. If NMA can help to satisfy this need, and at the same time get across the point that management is another equally fascinating and demanding profession, then these people will respond beyond your wildest dreams," he told delegates.

Davis said the median age level of NMA membership was up (43 vs. 41.5 in 1956), but that the age of the engineering and research group is only 38.2 years.

"So, we see that the character of our job is changing," he said. "But we find among us a growing group of young, highly educated professional specialists who are part and parcel of the new technology."

"The attraction, utilization and

direction of this priceless talent is the dominant overt challenge for NMA leadership on both the national and local level.

"The success with which this new talent is alloyed with the older resources of the organization will establish the strength and vitality of NMA in years to come."

Davis deplored a survey finding that "business ethics" was at the bottom of a list of subjects of greatest interest to supervision.

"The only group among us who gave business ethics a ranking as high as fifth in interest was first-level supervision in marketing and sales," Davis said. "Have we become so complacent and self-righteous that we don't even wonder any more?"

"It isn't that business men are amoral or that they can't tell right from wrong," he continued. "But right and wrong sometimes become so inextricably intertwined in the complexity of modern business, law, custom, and mores that what seems all right today may, in retrospect, turn out to be all wrong. Study and forethought can be most helpful."

"If, in meeting the challenge of change as it is generated by the technological revolution, we get so busy that we forget that ethics is a keystone without which the arch of business cannot stand, we will have labored in vain."

"Therefore I would like to challenge you to re-establish a lively concern for ethics as a prime . . . subject of interest for whose who aspire to be managers."

## Manned Missions to Venus, Mars Seen as Step Toward Jupiter

Missions to Venus or Mars as the first step toward sending men as far as Jupiter and Saturn within this century were outlined by Krafft A. Ehricke, General Dynamics/Astronautics director of advanced studies, recently.

Appearing before an American Institute of Aeronautics and Astronautics meeting in Palo Alto, Ehricke considered alternative missions including two to Venus and a trio of Mars ventures.

After unmanned instrumented probes into planetary space, Ehricke suggested missions crewed by eight men to precede later flights to other planets from Mercury to Saturn using progressively more advanced spaceships.

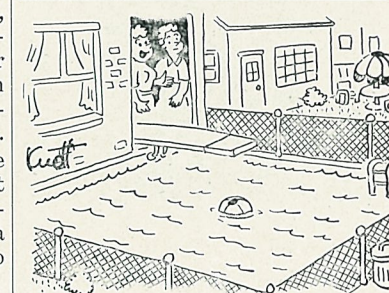
Among later missions Ehricke considered was a flight to orbit Venus, then from Venus to Mercury for a three-month stay at a temporary surface base prior to return to earth.

In the middle 1970s, he said, space vehicles appear to be limited to chemical and solid core

reactor nuclear engines, and he considered both convoy and single vehicle modes for interplanetary travel.

In his single vehicle proposal, Ehricke suggested that all loads might be carried by two modules linked together. In an emergency these could be separated in flight to improve chances of crew survival.

Ehricke, one of the world's foremost authorities on space flight, joined GD/Astro in 1954.



"... and we turned in our power mower as a down payment on the pool."



**MILESTONE** — Frank W. Davis, GD/FW president (left) presents certificate to 1,000th person to graduate from full-fledged Value Engineering course at GD/FW — Col. Art Powers.



## Plans Progress For Observance Of Xmas 'Giving'

Although Christmas is still weeks away, at General Dynamics/Astronautics many plans are being made to assist the less fortunate.

As usual a seasonal highlight will be the annual Christmas party for needy children. This year it will be held from 7 to 10 p.m. Dec. 14 at ARA Clubhouse with 150 children attending. They will be in the intermediate ages (from 12 to 16 years). This is the second year this age group has been treated to a Christmas party.

Con-Trib-Club has set aside \$3,000 (\$500 more than last year) to purchase clothing for each child. ARA's Wives Club will spend \$270 earned at a card party for gifts for each child. In addition, departments and functions will likely add to the gifts presented each child. In any case each child will be well remembered.

Salvation Army will again provide the names of needy and help administer the program. The Wives Club will buy clothing and direct wrapping of gifts. Under co-chairmen Gil Hutter and Bud Mecham, ARA members will stage the party.

Many other groups help out. Prophet Co. provides the food and its employees, along with other volunteers, prepare and serve it. Davidson Brothers sees that each child has a stock of candy and sweets of all types.

Meanwhile, other departments are preparing for their annual effort to "adopt" families, contribute to orphanages and homes or to help special causes.

Con-Trib-Club is compiling a list of needy Astro families who may need assistance to enjoy a (Continued on Page 2)

## VanHorn Addresses Vandenberg Club

VANDENBERG AFB — W. L. VanHorn, GD/Astronautics vice president and program director—AWS, was principal speaker here Nov. 20 for the Astronautics Vandenberg Management Club. He discussed potential future business for the Atlas weapon system.

## Depts. at GD/Astro To Be Rated On Product Quality Performance

Initial phases of a new program to recognize and reward departments and individuals for marked improvements in product quality are under way at General Dynamics/Astronautics. President J. R. Dempsey announced the program this week.

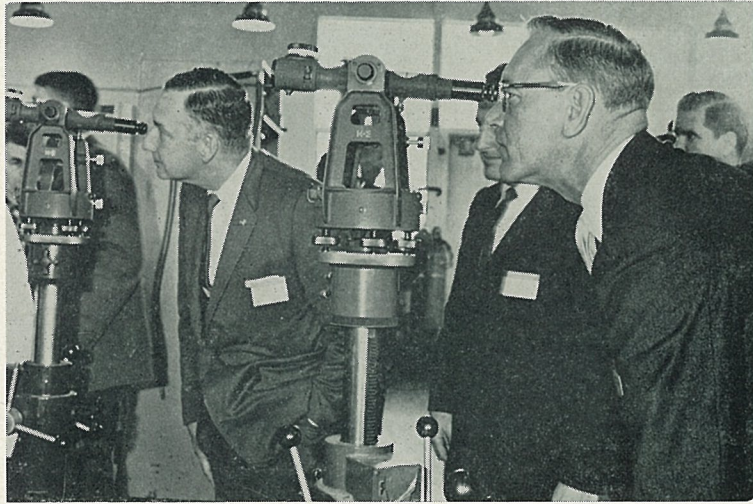
Theme of the effort is "do good work."

(This phrase was first used by Astronaut Gus Grissom when the Project Mercury pilots were asked what each employee could do to help.)

"The success of the Mercury program is now history," Dempsey explained, "but we can still actively apply principles we learned to current and future business."

In the spotlight at present is craftsmanship, stressing the extreme importance of individual skills to quality products.

Data collected through a product quality reporting system will be used to determine which departments participating show the greatest advancements in product quality. Which means that every member of the department, through his or her efforts, con-



CONGRESSIONAL VIEW — Transits provide closeup of almost invisible crack under stress tests in Astro's cryogenic test area for Rep. James Weaver, left, and Rep. Joseph E. Karth. Visitors to Astro are members of House Space Science subcommittee.

## Two Key Congressmen See GD/Astro Facilities

General Dynamics/Astronautics was host to two key Congressional figures Nov. 11 for a full day.

Rep. Joseph E. Karth (D-Minn.), chairman of the House Space Science subcommittee, and Rep. James D. Weaver (R-Pa.), a committee member, and members of the subcommittee staff were visitors.

"I am impressed with the personnel and facilities here," Rep. Karth reported later.

Of particular interest to the group was the Astronautics work on Centaur. Their official host for

the visit was Grant L. Hansen, vice president and program director—Centaur.

"I am convinced that the problems encountered up to now in the Centaur program either have been eliminated or are on the way to being eliminated," Rep. Karth pointed out.

Rep. Karth reported Congress will closely examine all requests for space research funds in the future, although he doubted this trend would be likely to hamper the Centaur program.

(Continued on Page 3)

## Spare Parts For Atlas Big Business at Astro

Concurrent with Atlas development, General Dynamics/Astronautics and the Air Force have teamed to create a unique logistics support program to serve it.

After five years of attention it has emerged as an unusual blending of modern electronic data processing techniques and time-proven "know-how" in handling its main commodity—spare parts.

No indication of the total size of this effort has been given, but only two contracts for single spares items have led to production of 75,000 items valued in excess of \$48 million!

Its emphasis has focused and shifted on research and development of Atlas as a weapon system and space launch vehicle, on its deployment and maintenance as a defense deterrent, on the installation of training devices, on updating tasks and a host of others, including certain Centaur efforts.

Customer services department under Director R. C. Harbert administers the program. W. D. Mead is manager of service parts.

Some spares production at Astro dates back to 1957.

In early 1958 the first of a long series of continuing provisioning conferences was held. These sessions bring together representatives of governmental agencies and industry to act on specific recommendations as to what parts and components should be stocked as spares, their quantity and reorder level, and a host of other important factors related to the program.

Early conferees ran head-on into a basic fact. Long-accepted provisioning methods like those

(Continued on Page 2)

## Field Teams Begin Update For 'F' Series

General Dynamics/Astronautics field teams were working in five different states this month on initial tasks involved in the modernization of all Series "F" Atlas launch and service facilities.

They are engaged in Project Red Heat, a program to bring operational Atlas facilities to the most up-to-date state of readiness possible.

Scheduled to continue throughout most of 1964, the program includes almost 400 changes to be made at each Atlas site. They cover improvements on the Atlas ICBM, its aerospace ground equipment, system test equipment, and launch equipment. Changes represent the latest in missile technology resulting from research and recent flight tests.

Astronautics has been designated management contractor for Project Red Heat by the Air Force Ballistic Systems Division.

Normally, Air Force personnel would perform this work, if compressed time schedules were not involved. On hand at each base will be personnel from San Bernardino Air Materiel Area, for management surveillance, and the Western Contract Management Region, contract surveillance.

Although the program at Astronautics is a division-wide one in which many groups participate, administration falls to the Atlas Weapons System project under Vice President W. L. VanHorn. An organization almost identical to that which administered operational activation of these sites draws the bulk of work involved.

"This concept helped us complete these bases ahead of schedule," VanHorn said. "Our experiences have dictated some changes and we are now geared for others, if needed, as we go along."

VanHorn pointed out that available experienced personnel to man field teams is an important factor. Virtually all key people, both supervisors and technicians, have worked in base activation previously, he said.

For instance, E. J. Huntsman heads the program as manager of activation and support. He previously served as manager of Series "D," "E," and "F" base activation. Another veteran, R. G. Daly, is chief of support field modification.

Each base force is headed by an operations manager who reports to Daly. They include: E. H. Southard, Lincoln AFB; C. R.

Jackman, Schilling AFB; J. J. Williams, Altus AFB; D. A. Munizza, Dyess AFB; R. A. Clark, Walker AFB; and R. D. Wasser, Plattsburgh AFB. Under each of these men are chiefs for each of eight major functions. Again, the majority are activation veterans.

Present personnel ranks at bases vary from less than 100 to more than 250. Employment will climb gradually, peaking at slightly less than 450 at each base. Included in each field team are many men required locally who previously worked for Astro in base activation.

(R. T. Blair, Astro manager (Continued on Page 2))

## Organization Complete For New Dept. 405

Organization has been completed for a new GD/Astronautics department to coordinate and direct all efforts in the field of establishing materials handling and packaging specifications, instructions and standards.

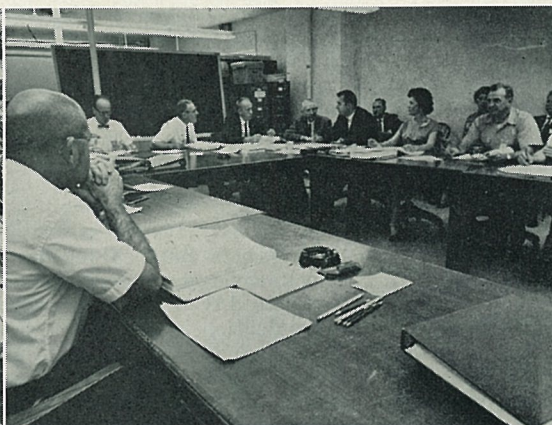
Dept. 405 (materials handling and packaging engineering) is under G. M. Coole, general supervisor, reporting to G. A. Gros-saint, manager of production engineering.

It brings together elements of two departments (290-1 and 337-6) and is the culmination of almost a year of concentrated work on the part of the Materials Handling Work Group created by President J. R. Dempsey.

This group studied all aspects of related programs, identified responsibilities, initiated corrective action needed and set up policies and recommendations. Frequent meetings, special supervisory training programs and five action groups added to the effort.

In addition, Astronautics has established a new Master Parts and Material Handling Task Group comprised of director/manager level members to present problems, review policy and assure effective implementation of directives issued through Dept. 405.

Departments, functions or individuals are invited to refer problems or suggested improvements to Dept. 405 through exts. 3461, 2024 or 2052.



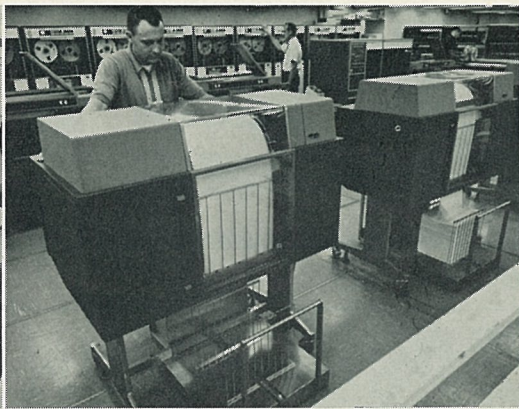
QUICK SUPPLY — GD/Astro does giant business in spare parts. At left is view of stock area where larger items are kept, packaged and ready to go. In center is provisioning conference now in session at Rose Canyon, involving Astro, Air Force and associate con-

tractors. In photo at right Susan Ford and Thalia Hood are in stockroom at Rose Canyon where 255,000 drawings and 5,600 vendor catalogues are stored. Improved provisioning techniques keep pace with modern missile age.





**INSTANT RESPONSE**—Speedy system is maintained to supply spares to Astro customers. In left above Genger Koger, Dick Bourne, Ray Woods, Fred Ernst and Dave Kay are in area where parts numbers are kept. In center at Plant 19 is IBM 1401 com-



puter and 1403 high-speed printer used exclusively on spares, while at right is another view of electronic data processing area where girls punch out tab cards. Daily reports show stock levels at every Astro installation.



## Rules Govern Decorations At Christmas

Traditional Christmas decorations will be installed at General Dynamics/Astronautics on Dec. 13. They will remain up until after the first of the year.

Included will be a giant (25-foot) tree in the lobby of Bldg. 2; smaller trees in the lobbies of Rose Canyon and Bldg. 19; outside trees near the pedestrian overpass and cafeteria at Plant 19; and outside trees at main pedestrian gates (1, 6, 7, 8 and 10) at Plant 71.

Each will be decorated and lighted.

Meanwhile, Fire Chief A. C. Anderson called attention to special rules governing in-plant or departmental decorations.

They include no lights of any type except those installed by plant engineering on Astro-erected decorations; all decorations must be fireproof; and all decorations must be inspected by the Fire Department PRIOR to installation.

Employees desiring to erect decorations may call the Fire Department, ext. 1811. Following inspection, decorations will be tagged and a log made of their location. Non-tagged decorations discovered in routine patrols are subject to removal without notice, Anderson added.

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## Plans Progress For Xmas Observance

(Continued from Page 1)

joyous season. On request, departments may be assigned special families to assist. Or others may add to the list the names of needy families within their departments. Call Mary Martin at ext. 2657 for this information.

One special fund will swell during the Christmas season. This includes money taken from the Bldg. 2 reflection pool, plus money placed by employees in candles to be located at every pedestrian gate. This fund will go to help needy Astro families.

Help from adults is needed in staging the party for children. Those interested may call ARA, ext. 1111, and leave their names.

## Astro Men Running For National Office

Two Astronautics men, Harold L. Jensen (Dept. 989-2) and Murray Fronke (Dept. 376-5), are national candidates for president and executive vice president respectively of the Society of Aeronautical Weight Engineers (SAWE).

They represent the San Diego Chapter in elections in January. The offices are filled by "pairs" of elected officials.

## Log Book Entries



Two new 25-year men were honored recently at GD/Astronautics. At left is Roy Gilliland, Dept. 140-0, and at right is Roy Combs, Dept. 404-1.

## Service Emblems

Service emblems due during the period Nov. 16 through Nov. 30.

Twenty-five-year: Dept. 146-3, J. W. Cox; Dept. 525-0, W. T. Rieff; Dept. 527-6, J. F. Holdener.

Twenty-year: Dept. 140-3, Frank Adams; Dept. 344-3, Eugene Foster; Dept. 564-2, Sam Weiss; Dept. 568-4, R. E. Hamilton; Dept. 714-0, W. G. Harrison; Dept. 758-0, R. B. Wilson.

Fifteen-year: Dept. 146-4, J. H. Eldridge; Dept. 319-0, J. A. Terramagra; Dept. 504-2, B. H. White; Dept. 547-5, K.A.E. Knudsen; Dept. 756-0, E. H. Shuman; Dept. 759-0, R. L. Brown Jr.; Dept. 833-1, M. L. DeShon; Dept. 835-1, T. H. Gantt.

Ten-year: Dept. 148-1, J. L. Fogleman; Dept. 191-0, Ruth K. LaHaie, Edith M. Larson; Dept. 194-0, W. J. Lethbridge; Dept. 250-2, W. H. Marshall; Dept. 290-0, H. H. Boynton Jr.; Dept. 369-2, H. J. Hastings; Dept. 370-1, A. T. Klein; Dept. 377-4, U. C. Sammons; Dept. 401-2, Elvira E. Esperti; Dept. 527-2, James Mazzarelli; Dept. 594-2, G. L. Drake Jr.; Dept. 682, K. C. Christopherson, J. F. Durazo; Dept. 780-1, Francisco Fuchales; Dept. 811-2, R. C. Van't Hof; Dept. 979-4, R. W. Cihak.

ERS

Twenty-year: Dept. 975-3, R. E. Lebeaux.

## Personals

Thank you all for the very beautiful flowers sent at the loss of our loved one, Edward J. Bryant, Dept. 140-3.

Jean Bryant and Children

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My sincerest thanks to all of you. It is heart warming to hear your tributes of praise for my beloved brother, Franklin J. Welch, Dept. 140-3. Thank you for your floral tribute, donations to the Heart Fund and your kind remarks.

Wilma M. Welch

## Deaths

CRIST—Jack L., Dept. 780-3. Died Nov. 15. Survived by wife, Eloise (Dept. 330-2), two minor daughters, two married stepdaughters.

HALL—John B., Dept. 835-2. Died Nov. 17. Survived by wife, Margaret Louise.

## Births

BALTES—Son, Donald Joseph, 5 lbs., 7 oz., born Oct. 23 to Mr. and Mrs. Pat Baltes, Dept. 123-0.

CLARK—Daughter, Monique Renee, 4 lbs., 11 oz., born Nov. 6 to Mr. and Mrs. C. E. Clark, Dept. 147-1.

HARWOOD—Son, Allan Fairfax, 6 lbs., 10 oz., born Nov. 8 to Mr. and Mrs. W. D. Harwood, General Dynamics NEWS.

MITCHELL—Son, Lawrence O. Jr., 7 lbs., 4½ oz., born Nov. 2 to Mr. and Mrs. L. O. Mitchell Sr., Dept. 833-4.

## General Dynamics NEWS

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Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assby. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth 1, Texas. Telephone PErsching 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

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Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, Hubbard 2-2200, ext. 2555. Norman Howden, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, Hilltop 5-4321, ext. 300 and 513, Joseph Tracey, editor.

## Papers Presented

BABITS—V. A., Dept. 592-0, "Space Efforts and Science Education," Ohio Science Education Association, Columbus, Ohio, Nov. 22.

BOEKAMP—K. M., Dept. 141-4, "Quality Assurance on Atlas and Centaur Programs," Fifth Symposium for Nondestructive Testing, Milwaukee, Wis., Nov. 22.

BOSSART—K. J., Dept. 502-0, "Space Vehicles, Engines and Boosters," Fourth Regional Aerospace Education Symposium, Louisiana State University, Baton Rouge, La., Nov. 20-22.

DRAKE—G. L., Dept. 594-2, "Atmosphere Recycling and Purification," American Chemical Society Symposium, Kansas City, Mo., Nov. 15.

DUKE—E. E., Dept. 528-2, "The Prediction of Void Volume in Subcooled Nucleate Pool Boiling," American Nuclear Society, New York, N.Y., Nov. 18-22.

FOGEL—L. J., Dept. 590-0, "Design Simulation of Man-Machine Interface," Fall Joint Computer Meeting, American Federation of Information Processing Societies, Las Vegas, Nev., Nov. 12-14.

HERBERT—D. E. with SALZER, E., both Dept. 591-0, "Divided Differences for Functions of a 2 Variables for Irregular Space Arguments," 606th meeting of American Mathematical Society, Pasadena, Calif., Nov. 21-23.

PIERCE—B. F., Dept. 594-9, "Anthropology and Biotechnology," American Anthropological Association, San Francisco, Calif., Nov. 21-24.

RUHE—R. K., Dept. 324-0, "Fast Access Systems Technical Information" (FASTI), Society of Technical Writers and Publishers, Orange, Calif., Nov. 18.

WILSON—A., Dept. 591-4, "Use of Computers to Study Games of Chance and Skill," Fall Joint Computer Meeting, American Federation of Information Processing Societies, Las Vegas, Nev., Nov. 12-14.

YORK—M. W., Dept. 528-4, "Internal Ballistics Measurements Using Gamma Beams," American Nuclear Society, New York, N.Y., Nov. 18-22.

## Retirements

CONDIT—Zelia, Dept. 644-0. Seniority date, July 30, 1953. Retired Aug. 8.

WHERNIK—A. G., Dept. 715-2. Seniority date, Dec. 5, 1950. Retired Oct. 18.

## WIDE 'FAIR SHARE' ACCEPTANCE SEEN

Early returns in the General Dynamics/Astronautics Employees' Con-Trib-Club membership drive indicate wholesale acceptance of "fair share" giving. Opening Nov. 18, the drive closed officially today (Nov. 27).

Fair shares were designated for each employee, based on salary and community needs. Fair share contributions from each employee would insure the overall goal in the drive—\$520,000. This amount, largest ever set for a Con-Trib-Club goal, is needed to meet growing needs within community welfare and charity agencies.

While the drive has an official closing date, it will not end until all employees have been given an opportunity to join. Those on travel, leave or vacation status will be contacted upon return.

Information about the drive may be obtained at ext. 2328.

## Spare Parts For Atlas Big Business at Astro

(Continued from Page 1)

used for aircraft had to be completely revised to meet modern missile technology.

"Acceptance of this fact was universal," Harbert said. "It has resulted in close cooperation, new concepts and results."

For instance, there were improved source coding techniques.

Source codes are letter/number symbols for each part, regardless of size. It tells using personnel the part's origin and application; if it is procurable; if it can be fabricated in the field or depot; or perhaps if it is actually a part of a larger, readily available, component. Each source code for Atlas includes a Federal Stock Number, as required.

(Some 75,000 Federal Stock Numbers, along with 255,000 drawings, 5,600 vendor catalogues and 76,000 vendor drawings—on microfilm—are retained by service parts as references.)

Astronautics has assigned an IBM 1401 Computer with IBM 1403 high-speed printer, plus supporting equipment, exclusively to its service parts program. It is located at Plant 19 and makes possible the closest control over the entire effort. It turns out daily reports showing stock levels at every Astro installation, including those off-site. It establishes regular reorder cycles. It provides management reports showing support effectiveness, inventory value, consumption in items and dollars by program and many other services. Astro applies data processing to every spares item from the time orders are placed for their procurement or production.

(The current system has evolved from one of hand-posted cards, punched cards and an IBM 305 RAMAC unit. In 1958 there were 4,280 part numbers in inventory and 350 transactions daily. At the peak of the base activation effort there were 55,000 part numbers and 2,000 daily transactions.)

Once a spare part has been selected and fabricated, it goes to bonded stock areas for final inspection, packaging and storage. Whenever possible parts are packaged ready for shipment. Periodically, complete checks are made of all stored items with special attention to those which may require rework after extended storage periods.

Administrative personnel and records for service parts are located at Rose Canyon. Warehouse space is located at Plant 19.

Certain parts, by their very nature, are regarded as priority items and Astro has a special group to process and expedite priority requests. This system processed 14,676 such requests for the "F" series bases alone. Another service earning plaudits is a Strategic Air Command White Hot Priority system in use since 1959. It is manned around the clock, seven days per week.

Each SAC launch and service organization is provided with the telephone and wire codes to reach this service, which can provide almost any part on a crash basis. To date, 8,283 such requests have been handled by this function.

Astro also provides special spare parts liaison personnel as needed for any using agency in addition to maintaining resident

offices at such key points as San Bernardino Air Materiel Area.

Rapid communication is essential and service parts utilizes all General Dynamics wire and telephone facilities as well as the USAF COMLOGNET.

Service parts also controls all records dealing with AF aerospace ground equipment utilized by Astro anywhere. This currently includes some \$120 million in equipment.

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## Astro Counts Many Spares Customers To Support Atlas

Many governmental organizations fall under the general heading of "customers" of General Dynamics/Astronautics' service parts.

For Atlas research and development efforts, activation of operational bases and the stocking of each with a predetermined number of spares, Astro deals primarily with the Air Force Systems Command's Ballistic Systems Division. In the field of spares for space launch vehicles, it is the same Command's Space Systems Division.

Too, National Aeronautics and Space Administration contracts for certain levels of spares in supporting its efforts.

Once Atlas bases are operational, the Air Force Logistics Command coordinates spares stocking through such organizations as the San Bernardino Air Materiel Area, prime supply center for Atlas, with other areas entering the program as required.

Strategic Air Command supply organizations take part in spares provisioning conferences and the Astronautics Air Force Plant Representative's office acts as general coordinating unit.

During 1961 a complete recap of all Atlas equipment and spares was held with 61,000 items being reviewed by those taking part.

## Field Teams Begin Update For Atlas "F" Series Bases

(Continued from Page 1)

of community relations, has just completed a series of talks in each of the six locations involved. He told civic leaders Astro will spend from \$4 to \$6 million at each base for salaries and services during the program.)

Unlike original base activation, Project Red Heat will involve simultaneous work at all bases, rather than sequence schedules. Work will progress on a two-shift basis to complete modernizations in the shortest possible time. This will insure maximum availability of each site.

Strategic Air Command crews who man each launch site will lend "over the shoulder" assistance during modernization work.

Astronautics will hold supporting equipment and personnel to a minimum at each base. There will be vehicles, drivers and offices, but not in numbers available during base activation.

"We enter this program with a minimum number of employees and the closest possible

time schedules," Huntsman said. "Which means we must realize maximum utilization of personnel and equipment. And we must rely heavily on others to assist us."

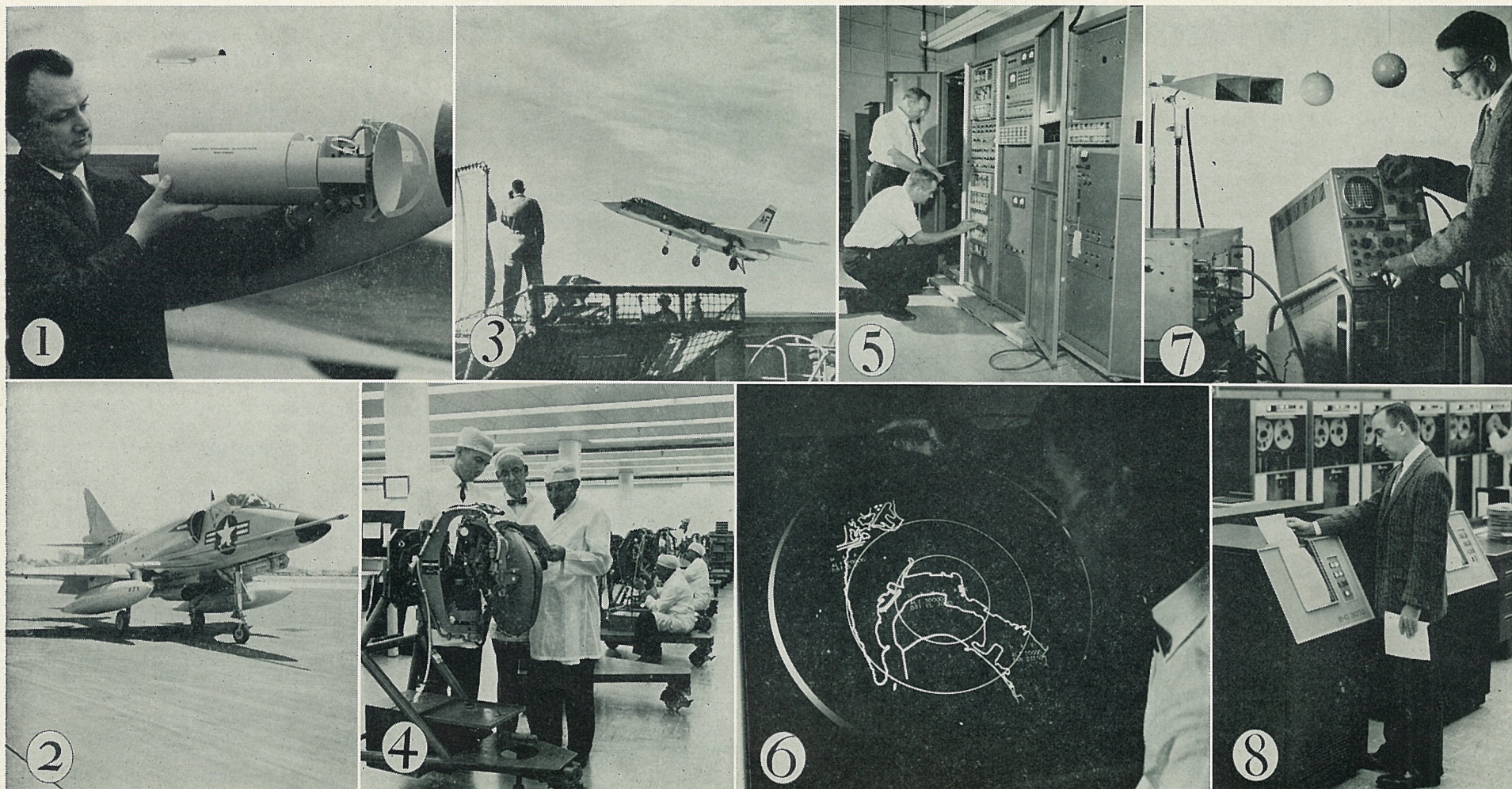
Huntsman pointed out in particular the importance of kits being prepared for each base. These include all parts, components and equipment required for the job. (General Dynamics NEWS, Oct. 30, 1963.)

"Unless kits are complete and we can rely on San Diego operations involved for close support, we will have problems meeting our contractual obligations," Huntsman said. "And this is a program in which the stakes are high, very high."

In San Diego about 150 activation and support employees will coordinate all phases of the program, lending help as required.

No company-sponsored airlift is slated in support of this program. Astro will rely heavily on rapid shipments via Air Force LOGAIR facilities.





**LEADER IN FIELD**—GD/Electronics-San Diego Division is in vanguard of companies developing advanced radar and data processing equipment. Pictured is sampling of wide range of GD/E products now in use: (1) Terrain Following Radar, compact system which can guide aircraft at safe pre-selected altitude over unknown terrain in zero visibility, was (2) installed in jet Skyhawk fighter for recent successful Navy evaluation. (3) Navy A3J attack bombers assigned to aircraft carrier Enterprise check out REINS navigation and bombing system for which (4) GD/E builds radar assembly under subcontract from North American Aviation. (5) S-C

4020 Computer Recorder in use throughout this country and Europe for high-speed recording of computer output on microfilm and paper. (6) New version of CHARACTRON® tube, shown as used in air traffic control situation, projects map of San Diego through window in rear of tube. Electron beams then identify various aircraft flying in area. (7) Highly-accurate Short Pulse Radar developed for military and commercial applications can distinguish between different objects only few inches apart. (8) S-C 3070 high-speed Electronic Printer is capable of printing at rates up to 5,000 words per minute.

## GD Executives Speak, Moderate At Joint Technical Conference

Four key General Dynamics Corporation executives took part in a Joint Technical Conference Nov. 7-8 at Disneyland Hotel, Anaheim.

The affair was a joint effort of the American Institute of Aeronautics and Astronautics, American Society of Mechanical Engineers, the Southern California Section of the Society of Automotive Engineers, the National Security Industrial Association

and the American Society for Quality Control.

Moderator for a panel discussing "How Can We Improve Technical Teamwork?" was C. F. Horne, president of General Dynamics/Pomona. E. D. Bryant, vice president—operations, GD/Astronautics, spoke on "Industry Views the Modern Logistics Problem." C. W. Frick, vice president—engineering, GD/Convair, discussed "Improving Design Interfaces of Major Weapon Systems." J. Y. McClure, Corporate director of quality control and reliability, served as moderator on a session covering "Developing the Modern Environmental Test Facility."

## B-36 Exhibit Spruced For Winter Visitors

For the benefit of winter visitors, GD/Fort Worth Management Club members have spruced up the B-36 Memorial at Greater Southwest International Airport.

A team headed by B. R. Main, GD/FW Dept. 20, cleaned and painted the interior of the huge airplane, and checked all safety features.

Sam Keith, chief of traffic, is permanent chairman of the club's B-36 Memorial committee.

Club volunteers serve as guides during visiting hours to the memorial from 2 to 5 p.m. Saturdays and Sundays.

## Two Attend Aircraft Meeting on Carrier

Two GD/Convair men were aboard the USS Forrestal for a two-day voyage out of Norfolk, Va., late last month when the aircraft carrier was the site of the semi-annual meeting of the NASA Committee on Aircraft Problems.

Making the trip were B. J. Simons, project manager—transports, who attended as a member of the committee, and Clarence Smith, design specialist, guest speaker on fatigue.

## General Dynamics Vp Appointed To Workmen's Comp. Commission

Robert H. Biron, General Dynamics vice president, has been appointed by Governor Brown to a California commission to study the state's workmen's compensation system.

Biron is one of seven prominent business and professional men named to the board under Senate Bill 783 with authority to issue subpoenas, administer oaths and hire a staff and consultants.

The study, aimed at recommendations to modernize compensation legislation, will include a "critical analysis" of the permanent disability rating system and

its effects on injured workmen and consideration of a rehabilitation system to get maximum medical relief and encourage return to work.

Governor Brown, in announcing the appointments, commented: "Our workmen's compensation program was established a half century ago and has grown to become the finest in the nation. But it is essential that any system and program be studied periodically to find out if it is operating efficiently and meeting current challenges."

Biron, veteran General Dynamics executive, is a native of Minneapolis and holds liberal arts and law degrees from the University of Minnesota. He previously held executive positions with Minneapolis-Honeywell, Northrop Aircraft and Trans World Airlines.

## Dynamics Divisions Will Close Tomorrow

General Dynamics people will join the rest of the country in observance of Thanksgiving Day tomorrow (Thursday).

Work at all plants will be suspended except for personnel performing essential maintenance or special production work.

Regular shift hours will be resumed Friday (Nov. 29).

Next holidays will be for Christmas and New Year's.

## Electronics/San Diego Separate GD Division

GD/Electronics-San Diego, formerly under the jurisdiction of the Pomona Division, has been established as a division of General Dynamics Corporation, Roger Lewis, president, has announced. John L. Lombardo, who has headed the operation since Sept. 7, 1962, will report directly to Lewis.

Roots of GD/Electronics-San

Diego go back to 1950 with establishment of a fifty-man CHARACTRON® tube project group at Convair-San Diego. In 1955 this group became a branch operation of General Dynamics' Stromberg-Carlson division in Rochester, N.Y. In 1961, the Stromberg-Carlson operation was merged with the Convair electronics department, which for several years had designed radar systems and components for the Corporation's aircraft and ground radar systems. In the latter part of that year, this organization was placed under the supervision of GD/Pomona, where it prospered and grew. Today the new division's personnel numbers over 1,200.

**Its products include a wide range of advanced equipment in two general categories: radar equipment and data processing systems.**

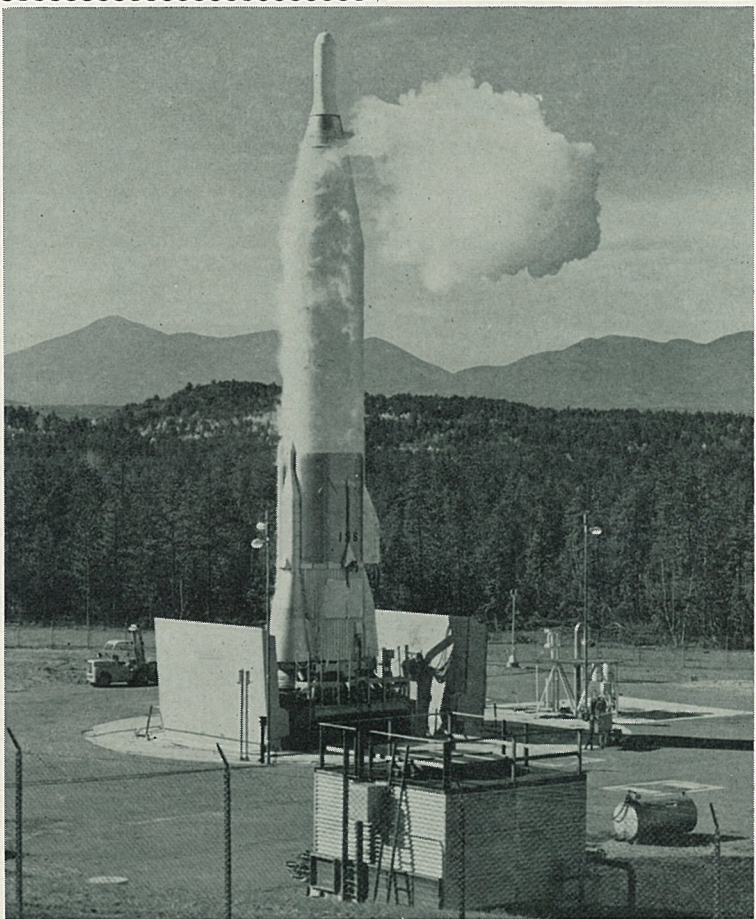
The data processing category—for both industrial and government application—consists primarily of peripheral equipment for computers and communications systems to translate data, and either display the results on a tube face, print them on paper or record them on film for storage and retrieval—or all three at once.

Within this category are such products as the S-C 1090 computer display console, the S-C 3070 high-speed printer, and the S-C 4020 which records the output of large-scale computers on microfilm and on paper in fractions of a second.

One of the division's most successful applications of its information display capabilities was the design, construction and installation of the Project Mercury Control Center.

Among its radar systems are: REINS radar for the A5C (formerly A3J) Naval attack bomber, a terrain following radar system which allows aircraft to fly safely at pre-selected altitudes over any terrain in zero visibility, and the Aircraft Station Keeper (ASK) compact radar system which enables aircraft to fly close formation under low visibility conditions.

This product base is expected to be the building block for the entry of the division into wider areas of electronics.



**CURRENT TARGET**—GD/Astronautics field teams have moved into Series "F" Atlas missile bases across nation to begin updating tasks. Target will be sites such as this in upstate New York where modernization will incorporate latest missile technology. Program will continue through most of 1964, involve almost 450 Astro men at each of six bases.

## Two Key Congressmen See GD/Astro Facilities

(Continued from Page 1)

Arriving at Astronautics early, the visitors were briefed on Centaur and other Astro space programs, including Atlas space launch vehicle development, manned space station activities, and the research-test program to in-

crease the power of Atlas with new, high-energy propellant.

President J. R. Dempsey took part in the briefings and tours. Other key Astro leaders participating, in addition to Hansen, were Vice Presidents C. S. Ames, and W. H. Patterson.



## \$100 in Pot for Marksman Who Can Break 50 Straight

Some hot shot will be \$100 richer after this Friday's CRA-ARA Gun Club trap shoot.

That is, he will if he can score 50 straight. There's \$100 in the pot now for a winner.

The Troy-type shoot is set for 7 p.m. at Gillespie Field Range Nov. 29.

Other special events scheduled for December are the regular club shoot Dec. 1; Big Game Contest drawing, Dec. 10; and the annual Christmas merchandise shoot, date to be announced later.

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The W. U. Gattermans of GD/Astro supplied themselves with a variety of Pendleton woolen articles at the CRA-ARA Gun Club's special trap shoot Nov. 17, winning five prizes between them.

Mrs. Gatterman got a Pendleton shirt for topping Class C in Event 1 and capris as high lady in Event 4. Gatterman, commonly known as "Gunner," took home a blanket for best score in Event 2, a sweater for winning Event 3, lounging robe for first in Event 4.

Howard Jacklin took Class A in Event 1 (16-yd.) with a 98. W. Betteridge, with a 95, topped Class B. Edna Gatterman took Class C, also with a 95. All three won Pendleton shirts.

Event 2 (handicap) results were: First, Gatterman, 90, blanket; second, L. P. Johnson, 89, robe and carrying bag; third, Jack Swank, 87, socks.

## Santa to Visit Garden Party

Santa Claus has agreed to show up a little early this season to pass out stockings full of candy to children at the annual CRA-ARA Garden Club Christmas party next week.

The holiday affair will be next Wednesday (Dec. 4) at 7:30 p.m. in ARA Clubhouse auditorium, said ARA Commissioner Everett Henderson and Henry Boyd, acting commissioner for GD/Convair group.

A gift exchange will be held with everyone to bring a present, not more than \$1 in value, suitable for someone his own sex and age.

Seven turkeys, a variety of merchandise prizes, and plants will be given as door prizes.

Grownups and children will vie for other prizes in a family bingo game. And all will enjoy the featured attraction, a magic show by GD/Astro's Dick Roe. Coffee and cake will be served.

All GD/Astro, GD/Convair, GD/Electronics people are invited but they should bring their gifts for the Christmas exchange.

## Winslow and Smith Technical Speakers

E. K. Winslow of GD/Astronautics engineering and C. R. Smith, GD/Convair design specialist, were main speakers at the Nov. 22 meeting of the Southwest Chapter, Society for Experimental Stress Analysis, in San Diego.

Winslow's subject was "Analysis of a Thrust Structure for a Large Pressurized Vehicle Tank, Based on Strain Gage Data."

Smith, structures fatigue specialist, spoke on material used in the handbook "Tips on Fatigue," which he has written under a contract from the Bureau of Naval Weapons.

## INCOME TAX COURSE OPEN FOR REGISTRATION

General Dynamics people may take advantage of an income tax course offered through the San Diego Adult Education program. It is available at two locations once a week for nine weeks. Federal and State Income Tax Preparation is taught Wednesdays, 6:30-9:30 p.m., Crawford High School, Room 109; or Thursdays, 6:30-9:30 p.m., Hoover Adult High, Room 206. Cost of course is \$4.

Event 3 (doubles) was taken by Gatterman with a 89 score.

He also stood first in Event 4, combined 16-yd. and handicap scores, with 187. Johnson won another robe and bag for his second-place score of 181. Mrs. Gatterman was high lady with 180.

In Event 5, based on total scores of 16-yd., handicap, and doubles, Herb Langfeldt had 264 out of a possible 300 to win a sweater.

## 'Self-Teaching' Books Accepted

Two "self-teaching" books on mathematics authored by P. H. Selby of GD/Astronautics life sciences section (Dept. 594) have been accepted for publication by McGraw-Hill Publishing Co. of New York City.

The programmed instruction books which will be released in paperback form next spring are the first of a series to be identified as "Auto-Math." The two to be published, "Trigonometry," and "Logarithms," were written first since there seems to be more universal demand for material in those fields of mathematics, Selby explains.

However, the entire programmed instruction series, when complete, will consist of six to eight books, leading students from basic arithmetic through integral calculus.

Each volume is entirely self-contained, said Selby, and is intended for general instruction or review use by industry, military agencies, technical and trade schools, or any individual with a desire to learn mathematics on his own.

Selby holds a degree in mathematics and natural science and has taught mathematics and navigation in the San Diego city schools' evening program. For many years he was supervisor of production flight training at GD/Convair until his recent transfer to GD/Astro. He also is co-author of another book, "American Air Navigator."

## Vandenberg Funds Benefit by \$27,500

VANDENBERG AFB—GD/Astronautics employees here, through their Employees' Con-Trib-Club, have given more than \$100,000 to support local charity and welfare agencies over the past five years.

This fact was brought to light early this month when Don Fagan, director of launch operations—PMR, passed out Con-Trib checks totaling \$27,500.

The United Fund of Northern Santa Barbara County received \$10,000; \$10,000 went to the Santa Barbara County Tuberculosis and Health Society to buy a mobile chest X-ray unit; and \$7,500 went to Our Lady of Perpetual Help Hospital, Santa Maria.

Con-Trib-Club has been active in this area for five years.

## DEC. 16 DEADLINE FOR SD STATE SET

General Dynamics employees in San Diego interested in enrolling for late afternoon and evening courses next spring at San Diego State College were reminded this week of a Dec. 16 admission deadline.

Students desiring to take such courses must be formally admitted to State College and obtain a registration priority, unless they are registered students during the current semester. The Dec. 16 deadline applies to both undergraduate and graduate students.

Formal registration for spring classes will be Saturday, Feb. 8.

Information on registering is available at the admissions office on the campus from 8 a.m. until 4:30 p.m., Monday through Friday. Telephone number is 582-4411, ext. 271.



GOOD-LOOKING "LOOT"—Naomi Adams of GD/Electronics does a little "gun slinging" as she shows off prizes going to lucky hunters at CRA-ARA Gun Club's annual big game drawing Dec. 10. Deadline for entry is first of week.

## It's Final Week For Big Game

This is the final week for entering big game kills in the annual Big Game Contest sponsored by the CRA-ARA Gun Club.

CRA Commissioner Jack Swank at GD/Electronics and ARA Commissioner Ezra Johnson at Astro main plant urge all General Dynamics hunters who have brought down big game this season to register them at any employee services outlet at once.

Entries in the contest were nearing 100 last week and more were expected before the deadline date, Dec. 1.

All who enter will have as good a chance as the next fellow to take home one of the valuable prizes at the Dec. 10 drawing.

Top prize is an outboard motor. Second-place award is a tape recorder; and third, a .22-cal. revolver. Many other prizes, all chosen for the sportsman, will be awarded.

On the Dec. 10 program, which decides Big Game Contest winners, will be announcement of another winner—the most improved shooter of the year.

Club members themselves have a chance to cast their votes for the person they think deserves the title. Ballot boxes are placed at the trap and skeet ranges at Gillespie Field and votes may be dropped in until Dec. 8.

Until this year, a committee had selected the winner of the Most Improved Shooter trophy. However, Commissioner Swank said that this time it was decided that the general membership should have a voice in the selection.

In case of a tie a committee will make the final decision.

An excellent movie on big game hunting, which will interest all attending, will wind up the evening's program, said Swank.

## Lens Club Members Face Busy Schedule

A busy schedule is in prospect for members of ARA and CRA camera clubs when they gather at 7:30 p.m. Sunday (Dec. 1) at the Photo Arts Bldg., Balboa Park.

On the agenda will be the group's annual election of officers; selection of the slide and print of the year; planning for the annual Christmas party; and a color slide show.

## Salvage Yards Set Saturday Schedule

Employee sales at GD/Convair and GD/Astronautics salvage yards will be held on the following Saturday schedule over the next three weeks:

GD/Astro—Nov. 30, Dec. 14.

GD/Convair—Dec. 7.

## Col. Heatherly Gets New Duty

Air Force Lt. Col. J. E. "Joe" Heatherly, a veteran figure in the Centaur test program, has reported to General Dynamics/Astronautics for a new duty assignment.

Lt. Col. Heatherly becomes chief of test operations for the National Aeronautics and Space Administration (NASA) resident office at Astro headed by Ronald Rovenger.

For the past three years, almost the inception of Centaur testing, Lt. Col. Heatherly has been on duty at Edwards Rocket Site as NASA's representative on the Centaur test operations.

At Astronautics he will coordinate all tests on Centaur being performed, exclusive of those at Cape Canaveral. His duties include coordinating related Atlas tests.

A 19-year Air Force veteran and former bomber pilot, Heatherly has been involved in various industry-type management positions for the Air Force for the past 12 years.

He and Capt. R. S. Campbell, NASA chief of engineering at Astro, are the lone Air Force men assigned to the local NASA office. Both are on special duty assignments of a permanent nature for NASA.

## Security Chapter Briefed at Astro

GD/Astronautics was host to 25 members of the National Security Industrial Association, Los Angeles Chapter, recently for a secret briefing on Atlas and Centaur programs.

Formed by the late James V. Forrestal, this organization aims at a better understanding of the relationship between the Department of Defense and contractors in national defense programs.

President J. R. Dempsey was host. Mort Rosenbaum, vice president for research, development, and engineering; W. H. Patterson, vice president for systems development; and Grant L. Hansen, vice president and program director—Centaur, discussed various aspects of Atlas and Centaur programs.

## G. P. Williams Heads Programming Chapter

G. P. Williams, technical publications assistant supervisor at GD/Convair, headed the slate of new officers installed last night (Nov. 26) by the San Diego Chapter of the National Society for Programmed Instruction.

Jac D. Meacham, GD/Convair publications editor and founder of the group, is vice president. He served as first president of the chapter.

Secretary is Brian Dresser of Title Insurance Co. Neil Bodwell, GD/Convair publications editor, is new treasurer.

The local chapter issued first issue of its new quarterly publication, "Framework," this month.

## SAWE TO MEET AT SANDS HOTEL

San Diego Chapter, Society of Aeronautical Weight Engineers, will hold a regular meeting at 7 p.m. Dec. 6 at the Sands Hotel. Members and guests are invited. Featured will be a movie, "The Drama of Metal Forming."

## SD TABLE TENNIS TOURNAMENT PLANNED

San Diego Industrial Recreational Council is setting up plans for a table tennis tournament. Ted Wilson, Ryan Aeronautical, is tournament chairman. Those interested in taking part may contact him at 296-6681, ext. 1436.

## ASTRO TEEN CLUB TO DANCE DEC. 7

The "Del Fi's" will be on hand at ARA Clubhouse Dec. 7 to play for a Teen Club dance between 7:30 and 11 p.m. One guest per membership card will be allowed with school clothes the official dress. Admission is 25 cents.

## 200 Turkey Prizes Handed to Golfers

Astronautics Management Club this month came up with what might well be the ultimate in golf tournaments—everybody won!

The Rancho Bernardo event Nov. 17 was billed as a "turkey sweepstakes," and that it was since all 200 participants carried home a turkey!

## Robert Sutherland Chief of Placement

Robert E. Sutherland has been named chief of professional placement and personnel at General Dynamics/Astronautics.

He replaces R. M. Smith who has left the company.

In his new post, Sutherland will be responsible for recruiting and placing engineers, scientists, and other professional personnel at Astro.

A native of Paducah, Ky., Sutherland holds both AB and MA degrees from San Diego State College. He worked for Consolidated Aircraft during the 1943-44 period.

Joining Astro in 1956, Sutherland worked as a personnel engineer, a salary analyst and salary administrator.

## GD/Astro's Harbert On Defense Council

Ray C. Harbert, Astronautics director of customer services, has been named a member of the Maintenance Subcommittee of the Defense Industry Advisory Council.

Roswell Gilpatrick, Deputy Secretary of Defense, made the appointment. This group includes representatives of Army, Navy, Air Force and industry. Its purpose is to elevate the posture and recognition of the maintenance function and to recommend to the Secretary of Defense specific actions which will improve effectiveness and economy.

Harbert attended a meeting yesterday (Nov. 26) at the Pentagon.

## Sanderlin Leader In Pistol Shooting

Only four points from perfect, Ralph Sanderlin copped honors in the Nov. 10 ARA Pistol Club shoot with a 296 out of a possible 300. Roland Schneider was second with a 293.

The expert class went to Bill Givens with a 289 followed by Warren Rancht with a 287. Carl Jensen won the sharpshooter event with a 270, trailed by Byron Clapper with a 247.

The Short National fell to Al Schindler with a 280, followed in order by Sanderlin (272), Ronnie Legg (269) and Bill Geopfarth (267).

## Astro-Coached Team Will Play in Bowl

The La Mesa "Scotties," Pop Warner football team coached by a pair of Astro employees, have been invited to their second straight post-season bowl game.

The "Scotties" will play San Dieguito at 5 p.m. Saturday (Nov. 30) as part of the Flower Bowl at Encinitas. Proceeds will go to the Cerebral Palsy fund.

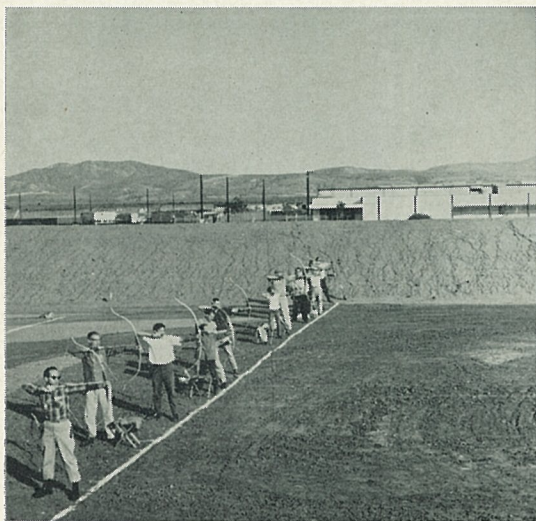
Joe Rogers and Al Servey, both Dept. 836-1, are coaches.

## Fife and Drum Corps Will Hold Practice

Plans for practice sessions for a new ARA Fife and Drum Corps to start in January were announced recently by James Churchyard, one of a group interested in starting the activity.

Meanwhile, both men and women desiring to take part are asked to contact Churchyard at ext. 4513.





ON THE LINE—Astro archers initiated new target range in ARA Recreation Area Nov. 17 with shoot. At left most of 20 contestants draw a bead on targets during practice session. At right, Claude Summers (Dept. 373) and son, Sandy, 10, tally up scores. Archers will hold shoots on alternate Sundays after first of year.

## Twice Dispossessed, GD Archers Find New Location For Range

Astronautics archers, victims of "expansion" on at least two occasions, have settled down to a regular routine, utilizing their new range in the eastern portion of ARA Recreation Area.

The archers were among the first to build a facility in the area. They lost it when the materials building was erected. A second range gave way to an access road to the same building. During the past summer months the groups held Thursday night shoots under the softball diamond lights. These have been discontinued, however.

Nov. 17 found some 20 archers on hand in the new area for a regulation target shoot. The new range features five permanent targets (expandable to 11, if needed) and marked distances from 20 to 60 yards. Novelty events can also be staged in the same area.

Sunday (Dec. 1) a single American shoot will be held. Registration and instruction will be from 12:30 until 1:30 when competition begins.

On Dec. 15 (1 p.m.) a Christmas "turkey shoot" will be held with three turkey awards.

After the first of the year

## Speaker Clubs Meet Jointly at GD/Astro

GD/Astronautics executive dining room was the scene last month of a gathering of four area Toastmaster/Toastmistress clubs in which General Dynamics personnel figure prominently.

Guests of Serra Mesa Toastmistress Club were members of Dynamics Toastmasters, Delta Toastmistress Club, and Mt. Helix Toastmasters.

Among some 75 persons attending were Toastmistress officials Fran Leland, southwest region supervisor, and Sunny Dark, Council 7 chairman, both employed in GD/Astro's AFPR office.



TOAST LEADERS — Present at joint Toastmaster/Toastmistress meeting sponsored last month by Serra Mesa Toastmistress Club were Ken Jamrus, left, GD/Astro Dept. 652-5, Dynamics Toastmasters president; Barbara Macdonald, GD/E, Delta president; Helen Husseman, GD/Astro Dept. 193-1, president of Serra Mesa Club; and Glen Vail, GD/Astro Dept. 642-2, Mt. Helix president. — Photo by Joe Kayada, Astro Lens.

events will be staged on alternate Sundays. Al Stone is ARA Commissioner.

## ARA BASEBALL NINE FIRST HALF WINNER

Outstanding pitching and hitting over the past four weeks have led ARA's entry in Winter League baseball circles to a first half crown.

Larry Murillo and Larry Shuck have allowed batters only seven runs in four games. Jim Gordin batted at a .333 clip, while Hilbert Murillo, Dick Shafer and Gary Copeland hit over .300 each. Dennis Allison and Tim Wilbur turned in outstanding infield play.

This combination helped in a 5-4 victory over El Cajon and a 4-1 victory over San Diego Police Department.

To date, Astro has won seven straight, including four that led to the first half championship. Second half play will extend into 1964 with a play-off, if needed, to determine the league champion for the year.

## Score Play in Annual Badminton Tourney

Twenty-one players turned out Nov. 17 to compete in the annual ARA badminton championship tournament.

Best player awards went to Channarong Ratanna Svang-Sveng of Dept. 130-5 and Katie Marr, wife of ARA commissioner for badminton, Les Marr (Dept. 967-3).

Two turkeys presented as door prizes went to Marvin Smith (Dept. 147-2) and John Grando Jr., son of John Grando (Dept. 146-4).

## RESERVE SPOTS FOR BEST BALL

Reservations for ARA Golf Club's two-man best ball tournament Dec. 8 at Circle "R" will be accepted through Dec. 4 at ARA headquarters, ext. 1111. Awards will be presented for both gross and net totals.

## Sailing Club Adopts New Meeting Night

A new meeting night, the fourth Wednesday of each month, has been selected by ARA Sailing Club in an effort to gain additional room.

On the fourth Wednesday the club will gather in the main auditorium of ARA Clubhouse, eliminating "standing room only" sessions in smaller quarters. Meetings are at 7:30 p.m.

Boats continue available for qualified club members with docking at Milt Reynold's Yacht Sales, Shelter Island (next to Bali Hai). Cost is \$1.50 per hour on Saturday and Sunday; \$1.25 per hour weekdays.

Instruction is offered from 10 a.m. until noon on Saturday and Sunday, checkout from noon until 2 p.m. Rigging classes (a must) are offered Monday nights. Call ARA, ext. 1111, for details.

## Rockhounds Heading For Victorville

Plans for an ARA Rockhound field trip to the Victorville area Dec. 8 were announced this week by Commissioner Fred Baugh.

Plans call for a gathering of those participating at 9 a.m., Dec. 8 at a central point, then a caravan to the specific area that's target for the day.

Sought on this trip will be verd antique, a greenish form of serpentine marble.

Guests are always welcome and will be provided information and maps upon request. Contact Ray Beard, field trip chairman, at 277-6423 or Barbee Scheibner, club secretary, at ext. 2277, Plant 71.

## Ski Club Will Make Christmas Journey

Astro Snow Ski Club is planning a special year-end ski trip to Mammoth Lakes and Lake Tahoe and invites interested skiers to "come along."

Some 10 members are ready for the trek now, others can be accommodated, although reservations must be made immediately. The trip will extend from Friday (Dec. 20) after work through Christmas day.

Those interested may contact Vern Norris, ext. 3983; Stan Stein, ext. 3643; or Tibor Lody, ext. 1085, all at Plant 71.

## Winners Announced In Card Competition

John Donan and Ben Hoffman won turkey door prizes at the ARA Bridge Club Nov. 15. Winners at bridge were Mr. and Mrs. C. A. Miller (North-South) and Mr. and Mrs. Dave Krause (East-West).

Winners in the monthly master point event staged Nov. 8 in Section "A" were Mr. and Mrs. Phil Evans (North-South) and H. H. Johnson and John Budd (East-West). Section "B" winners were Mr. and Mrs. Miller (North-South) and A. J. Johnson and Mrs. Jacob Moore (East-West).

Are you giving your Fair Share through Con-Trib-Club?

# Sports & Recreation

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

★ ★ ★

ARCHERY — Single American shoot Dec. 1, 1:30 p.m. ARA Archery Range.

ASTRO LENS — Meets 7:30 p.m., Dec. 1, Photo Arts Bldg., Balboa Park.

ASTRO MOTORS — Potluck dinner, Dec. 8, ARA Area. Contact Jim Kilpatrick, ext. 3100.

ASTRO PLAYERS — Production meeting, 7:30 p.m., Dec. 2, ARA Clubhouse in preparation for "The Curious Savage" production.

DANCE — Annual Christmas dance Dec. 14, El Cortez Hotel. Tickets \$1 at employee services outlets.

FISHING CLUB — Regular meeting, 7:30 p.m., Dec. 4, ARA Clubhouse.

GOLF — Call Joyce, ext. 1111, for Dec. 8 Best Ball tournament reservations.

RADIO CLUB — Meets 7:30 p.m., tonight (Nov. 27), ARA Clubhouse.

ROCKHOUNDS — Field trip Dec. 8 to Victorville area. Call Ray Beard, 277-6423, for details.

SAILING CLUB — Now meets fourth Wednesday, 7:30 p.m., ARA Clubhouse.

TEEN CLUB — Regular dance 7:30 p.m., Dec. 7. One guest per membership.

## LILLIE MAE BARR ACCEPTS ARA ROLE

Lillie Mae Barr, one of San Diego's favorite actresses, has accepted the role of "Mrs. Savage" in the forthcoming ARA Astro Players' production of John Patrick's "The Curious Savage."

The play will be staged in March.

However, production work gets under way in early December with a meeting set for 7:30 p.m. Dec. 2 in ARA Clubhouse. Many helpers will be needed for many jobs and experience is not required, according to Director John Cone.

Ten parts of the play, five for men, five for women, will be filled later at tryouts. Individuals desiring scripts prior to tryouts may contact Cone at ext. 4304.

Miss Barr, a Prophet Co. employee at Astro, will be making her first appearance with the Astro Players. However, she has won audience acclaim for many roles at the Old Globe, Mission Playhouse and other theater groups.

## Cannau Repeats As Net Champ

John Cannau (Dept. 966-4) won his third straight ARA tennis championship early this month by topping Terry Chatwin, 7-5, 6-4 in the finals.

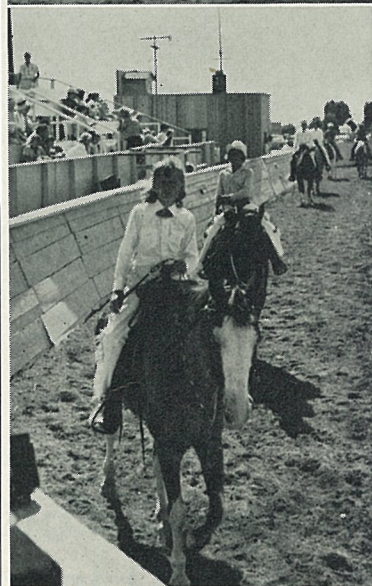
Trophies were awarded last night (Nov. 26) at ARA Clubhouse.

Keeping tennis titles in the family, Cannau teamed with his daughter, Raye, to win the mixed doubles, besting his wife, Flora, and Al Rush of Dept. 951-4 in the finals.

Rush teamed with Bob Bachman (Dept. 513-1) to win the men's doubles over Marshall (Dept. 032-4) and Terry Chatwin.

Rita Johnson won the women's singles crown. She is the daughter of K. Johnson (Dept. 311-2).

Men's singles consolation title went to Bill McHenry (Dept. 526-6) who bested Ray Hardy (Dept. 860-0).



FUN SHOW — Youngsters shone recently at Riding Club show. At top is Susan Harmer, 10, and below Cindy Sidock, also 10, is in lead.

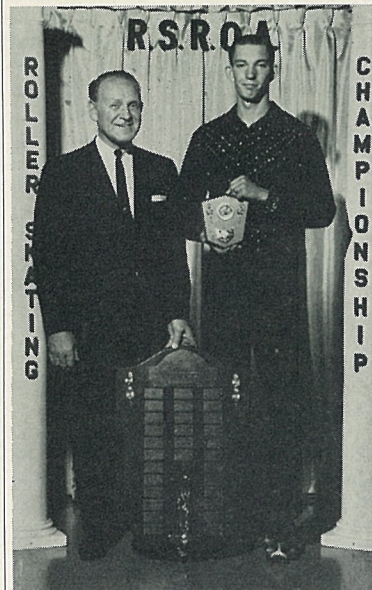
## GD Son World Skating Champ

Unless someone comes up with additional competitive roller skating events, a General Dynamics/Astronautics son may have reached the "end of the line" following his victory in world competition.

John Renz Jr., 18, early this month won the world's men's singles roller skating championship at Las Vegas. In so doing he pinned the first defeat in seven years on West Germany's Karlheinz Losch.

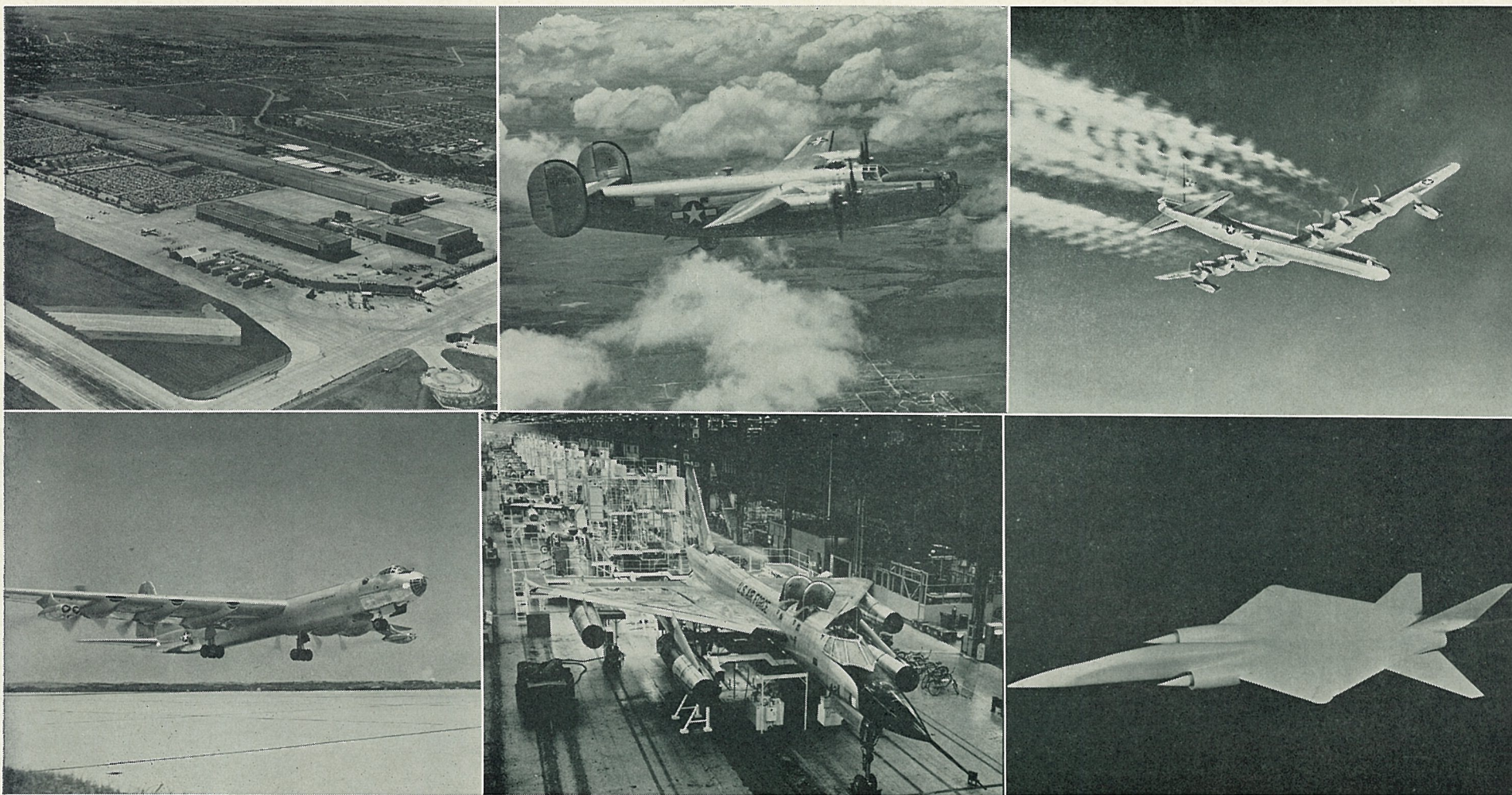
Young Renz, a San Diego City College student, has swept through state, regional and national championships annually since 1960 (General Dynamics NEWS, July 18, 1962). His father is in Dept. 250.

This year he was exempt from state competition. He won the senior men's singles event at Bakersfield (regional) then moved on to take his fourth national title at Portland, Ore., prior to the Las Vegas trials.



WORLD'S BEST — John Renz Jr., right, recently won world men's singles roller skating title at Las Vegas. Astro son is shown following national victory at Portland with his coach, Elmer Ringliessen.





**HIGHLIGHTS** — General Dynamics/Fort Worth dates back to 1941 when ground was broken for enormous plant (upper left) and early years were devoted to producing wartime B-24s (center above). Then came B-36 Peacemaker (lower left) and

still later the nuclear test airplane (upper right), first to carry reactor aloft. Most recent product was B-58 (center below). At lower right is model of F-111, which will be nation's first combat variable-wing fighter.

## Versatile Fort Worth Division Makes Transition to Aerospace

(Following is the first in a series of general features covering different General Dynamics divisions to remind employees of how wide is the "wide, wide world of General Dynamics.")

Appropriately, perhaps, the builder of the nation's biggest and fastest bombers—and what looms as its most versatile fighter plane—is located deep in the heart of Texas.



Fort Worth Division of General Dynamics sprang up nearly 23 years ago on the scenic shores of Lake Worth. It has evolved from a "bomber plant" into a modern aerospace firm. Its capability spectrum: supersonic aircraft, space technology, nucleonics.

Its latest product, the Mach 2 B-58 Hustler, is Strategic Air Command's swiftest nuclear deterrent punch.

B-58 production halted as the 116th Hustler rolled off assembly lines last year. But with unprecedented urgency, GD/FW people began designing and building the nation's first combat variable-wing fighter plane for Air Force and Navy, the F-111. This contract is potentially the largest ever awarded for a fighter plane. The F-111 will have Mach 2-plus speed and intercontinental range. Its variable wing can be extended for short takeoffs and landings (from austere fields), then tucked back for supersonic flight at very high altitudes or on the deck. This is the plane, some experts say, which will revolutionize the industry.

Though such splendid supersonic stalwarts as the B-58 and F-111 have pushed GD/FW to the forefront of the industry, it was the old piston-engine performers—the B-24s and B-36s—which earned the division's niche.

On April 17, 1942, about a year after ground was broken for the plant, the first GD/FW-assembled B-24 Liberator roared aloft. During World War II, a total of 2,743 Liberators and over 250 transport versions, the C-87, rolled off busy GD/FW assembly lines. Peak activity was in January, 1944: 200 airplanes.

GD/FW also built and ushered quickly into service the B-32, which saw limited service in the Pacific near war's end.

If B-24s and B-32s helped

win the war, GD/FW's next major assignment—the B-36 Peacemaker—preserved the shaky peace that followed.

The giant 435-mph B-36 could carry a bomb load of 84,000 pounds and roam for 10,000 miles. A reconnaissance version remained aloft without refueling for over 51 hours, still a record.

Peacemakers reigned as America's prime deterrent for a decade, yielding finally to the faster jets. But begrudgingly; GD/FW built a jet version of the B-36—the YB-60—which made a number of successful flights.

While sticking mainly to its specialty as an aircraft manufacturer, GD/FW, with a modicum of fanfare, has intensified its space-age efforts.

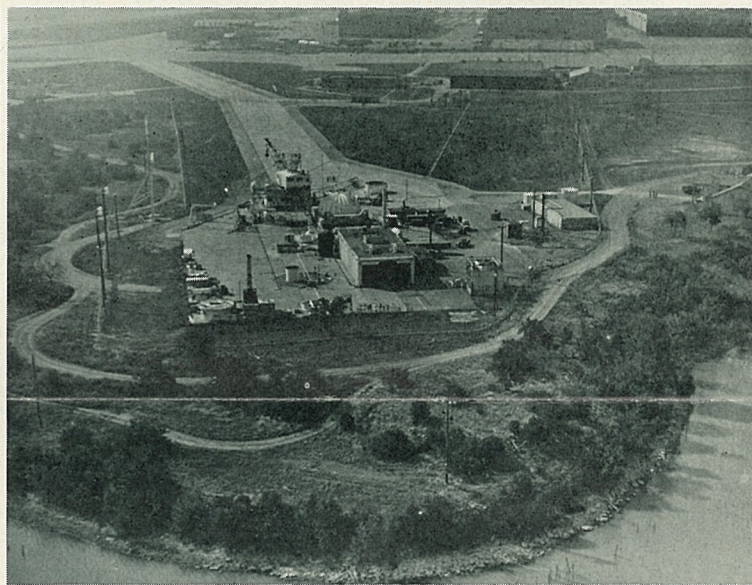
It builds the Centaur and Surveyor nose cones and the big booster section for the Atlas missile. And the company's unique experience in honeycomb structure (a B-58 breakthrough) is now being used in building an instrumentation section for the Saturn project. GD/FW is handling this and a number of other "critical" tasks for NASA's Marshall Space Flight Center in Huntsville, Ala.

GD/FW's Nuclear Aerospace Research Facility (NARF) is, in the Air Force's own language, "the only facility of its kind." Originally a \$2 million center, NARF was set up to accommodate GD/FW's shielding experimentation work on a nuclear airplane. Since then, NARF has expanded into a \$10 million facility, and it works for many agencies in many areas: shielding, instrumentation, radiation effects, safety, and others.

GD/FW thus became the first—and probably only—company to get "nuclear airplane experience" by actually flying a reactor for a number of hours. The nuclear airplane concept, though scuttled, is still considered by many the answer to a recurring need: an airborne launch vehicle capable of loitering near target for very long periods.

Many other relatively small contracts, both hardware and study, are giving GD/FW engineers and scientists know-how in space technology.

The diverse activity at GD/FW confirms its aim as set down in the "official" language of the sales department: "conceptual schemes into atmospheric and space vehicle systems which will meet the mission requirements of the future."



**LAKE SHORE**—Nuclear facility, foreground, is located in fenced-in area at north end of GD/FW reservation, near Lake Worth.

## Nuclear Research Important Part of GD/Fort Worth Task

Nuclear power already drives power plants and runs submarines, and soon it will propel missiles through outer space.

How will radiation from its reactors affect the space ship and its systems? And more importantly, the humans who guide it?

These and many other knotty nuclear problems in space are being investigated at GD/Fort

Worth's Nuclear Aerospace Research Facility (NARF).

Veteran nuclear scientists are working on a number of projects including:

Pocket-sized dosimeters which crews of Apollo and Gemini space craft can use to take radiation measurements in flight.

A study to show how much radiation an unshielded lunar space ship would receive; another to show how radiation will work on the sensitive electrical systems of a missile; and still another to determine what effect a nuclear-weapons burst in space would have on human space travelers.

A substantial amount of NARF's activity is directed toward space, though certainly not all. For example, nuclear engineers have worked on a system of aerial radiological monitoring for the Office of Civil Defense.

Other projects have included fabrication of miniaturized, highly reliable nuclear instrumentation for space vehicles.

NARF was founded in 1951 to support GD/FW's efforts in nuclear-airplane research. In recent years, under direction of Dr. H. R. Dvorak, it has assumed functions in radiation shielding, radiation effects, nuclear instrumentation, and nuclear safety.

Its facilities have increased from \$2 to \$10 million in value, and include: a 3-megawatt Ground Test Reactor; 10-megawatt Aerospace Systems Reactor; neutron generator and Cobalt 60 gamma irradiation unit.

## These Are GD/FW History Highlights

April 18, 1941: Ground broken.

April 17, 1942: First Fort Worth-assembled B-24 flown.

Aug. 9, 1944: War Department announces plans to build B-32.

Aug. 8, 1946: XB-36 makes maiden flight.

Aug. 28, 1947: First test-flight of production B-36.

March 26, 1949: First test-flight of B-36 with four jet engines in addition to six pusher-type piston engines.

Sept. 5, 1951: AF announces plans to develop atomic-powered airplane.

April 18, 1952: YB-60, eight-jet, swept-wing bomber makes maiden flight.

Oct. 12, 1954: AF orders undisclosed number of B-58s.

Sept. 17, 1955: NB-36 flies with operating atomic reactor aboard.

Nov. 11, 1956: B-58 Hustler makes first flight.

June 29, 1957: First Mach 2

(twice speed of sound) flight.

Sept. 18, 1959: B-58 makes low-level flight from FW to California under 500 feet at over 700 mph.

Dec. 1, 1959: B-58 No. 31 becomes first operational Hustler to join SAC.

Sept. 13-15, 1960: 43rd Bomb Wing crews score best pair of radar bomb scores and top individual high-level navigation run in first year in SAC Combat Competition.

Jan. 12, 1961: B-58 crews from Carswell AFB shatter world speed record for 2,000 kilometers (averaging 1,061.80 mph).

Jan. 14, 1961: B-58 crews from Carswell AFB smash 1,000-kilometer speed record (averaging 1,284.73 mph).

May 10, 1961: B-58 crew from Carswell averages 1,302 mph around 669.4-mile closed-circuit course at Edwards AFB to set sustained speed record and win Bleriot Trophy.

May 12, 1961: Bunker Hill AFB receives first B-58 (Hoo-sier Hustler).

May 26, 1961: B-58 crew from Carswell AFB sets record for New York-to-Paris flight—3 hours, 19 minutes.

March 5, 1962: B-58 crew from Carswell AFB slashes three world speed records flying from Los Angeles to New York and returning in 4 hours, 42 minutes, averaging 1,045 mph.

Sept. 14, 1962: Carswell AFB crew pilots B-58 to height of 85,360.8 feet with payload of 5,000 kilograms (11,023 lbs.) over Edwards AFB to break the world's altitude - with - payload record, formerly held by USSR.

Nov. 24, 1962: GD/FW and Grumman Aircraft Engineering Corp. awarded contract to build F-111.

Oct. 16, 1963: Bunker Hill AFB crew pilots B-58 from Tokyo to London in 8 hours, 35 minutes setting 15th record.



# Christmas Message from Roger Lewis Strikes a Solemn Note

*This year we will mark the feast of Christmas only a few days after the conclusion of the national period of mourning for President John F. Kennedy; the memory of the loss will temper the spirit of celebration.*

*It is fitting at this time that we honor the late president by rededicating ourselves to the cause which he considered the primary work of our time—Peace on Earth.*

*The men and women of General Dynamics have made a major contribution over the years in helping to keep this country strong so that it might preserve peace.*

*We can at once honor the memory of President*

*Kennedy, and assist President Johnson in his awesome responsibilities by responding to his call for renewed efforts to keep America strong without sapping our economic resources.*

*In this way, the true spirit of Christmas may one day live in the hearts of men everywhere.*

*Roger Lewis*

Roger Lewis  
President

GIIMMID

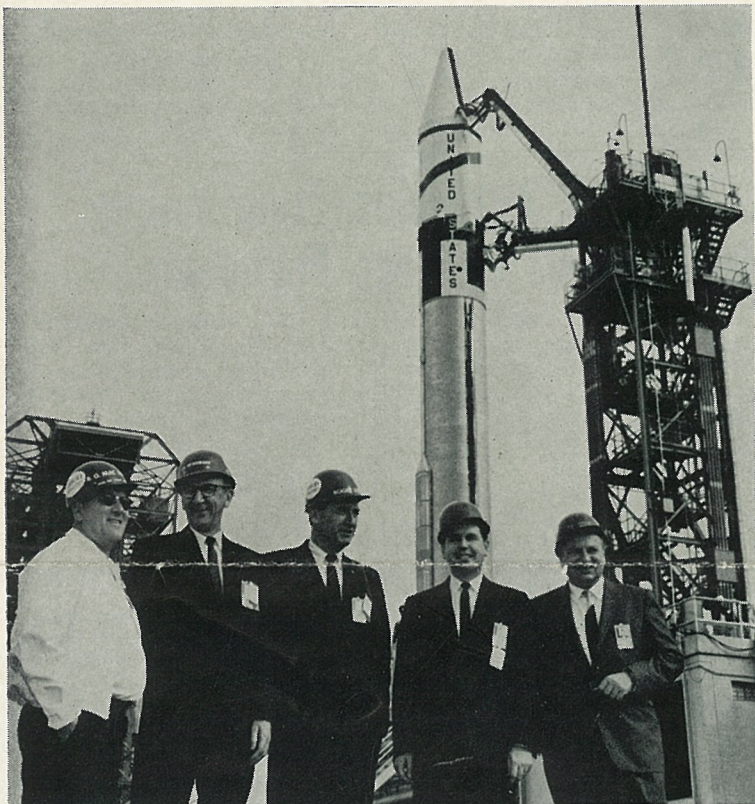
ASTRONAUTICS EDITION

# GENERAL DYNAMICS NEWS

Vol. 16, No. 25

PUBLISHED BY GENERAL DYNAMICS CORPORATION

Wednesday, December 11, 1963



**CROSSED FINGERS**—Day before Centaur launch at Cape Kennedy Roger Lewis, General Dynamics president, and E. H. Heinemann, vice president-program development, visited pad to "talk with troops." From left, B. G. MacNabb, Astro test operations director, Heinemann, Lewis, Grant L. Hansen, vice president and program director-Centaur, K. A. Ehrliche, Astro director of advanced studies.

## Atlas, Centaur Combine For Excellent Launch

Centaur 2-B, launched late last month from Cape Kennedy as the "business end" of an Atlas-Centaur Two (AC-2) combination, now whirls around the earth in orbital flight that may continue for 200 years.

It travels in an egg-shaped orbit, reaching a speed of 15,150 mph at its high point (apogee) some 1,050 miles in space and a speed of 17,550 mph at its low point (perigee) some 340 miles above earth.

Each orbit requires 108 minutes.

Centaur is visible on earth on occasion as a flashing object (it tumbles end over end) under ideal weather conditions (best sighting times: dawn and dusk).

Although its "active life" was just over 10 minutes—time required for launch, separation, start and burn of Centaur engines and subsequent orbital injection—Centaur took a giant and long-awaited step in the goal to send manned spacecraft to the moon.

Operational Atlas-Centaur vehicles are slated to send Surveyor spacecraft on their journey to soft-land on the moon, a program that will unlock many secrets of space before manned lunar excursions are dispatched. Later, there will be Mariner B probes of near planets.

Equally far-reaching is Cen-

taur's role in developing technology in the field of high-energy space vehicles. Centaur is the first of these vehicles employing fuel of hydrogen and liquid oxygen. This combination, called the ideal rocket fuel, produces as much as 40 per cent more thrust

(Continued on Page 3)

## 'Do Good Work' Craftsmanship Program Set

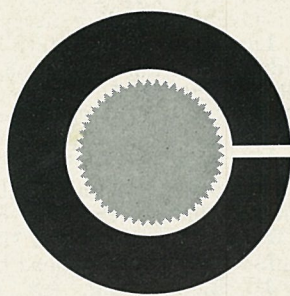
Special meetings have introduced supervisory personnel in production departments to General Dynamics/Astronautics' new inter-departmental Craftsmanship program.

The Craftsmanship competition is part of a division-wide effort to encourage all employees to "do good work," and emphasizes the importance of individual skills, diligently applied, to every phase of GD/Astro's leading role in the nation's space effort.

Competition involves 13 GD/Astro departments—382, 454, 673, 714, 715, 718, 723, 731, 732, 733, 759, 780 and 972. It provides these groups with a practical method of measuring quality improvement in their work, and of rewarding the unit which shows most significantly improved performance.

Top department each month  
(Continued on Page 2)

## CRAFTSMANSHIP



DO GOOD WORK

## NASA Extends Praise For Atlas' Precision

Placing American astronauts in space, "the most demanding task ever required of a launch vehicle," has earned for Atlas, General Dynamics/Astronautics and its many employees a special word of praise.

George E. Mueller, associate administrator for manned space flight for the National Aeronautics and Space Administration (NASA), extended the praise in a letter to President J. R. Dempsey.

"During the recent Collier Award Ceremony for the Mercury astronauts, I was again reminded of the remarkable precision with which four of these men were put into earth orbit by Atlas boosters. This is surely the most demanding task ever required of a launch vehicle and its performance has made Atlas the envy of the missile industry," Mueller wrote.

"It is my pleasure to extend to you and to your entire General Dynamics/Astronautics team the warm congratulations of all of NASA. Your skill and enthusiastic devotion to the first manned space flight program was an essential and major element in the success of the Mercury program.

"My heartiest thanks for a job well done."

## Con-Trib Drive Over The Top, 92 Pct. Belong

A vast majority (92 per cent) of General Dynamics/Astronautics employees have pledged to give their Fair Share in supporting San Diego area community health, welfare and service organizations.

Their pledges mean a \$520,000 goal set during the recent Employees' Con-Trib-Club membership drive has been met. And possibly exceeded, if cards still out add an appreciable amount in dollar pledges.

On the strength of this showing, Con-Trib-Club's Board of Directors has pledged an estimated \$400,000 to the current United Community Services fund drive in San Diego. This is the amount to be given if all employee pledges are received over the

coming year. This amount represents the largest single gift made to this drive in this or any preceding year. It will go a long way toward realizing a \$4 million drive goal needed to support 79 agencies in the San Diego area.

Aiding in meeting the \$520,000 goal, as well as adding new members were individual goals set for 10 major reporting units as well as departments and functions within these units.

Research, development and engineering led all major units with a 166 per cent increase over assigned dollar goals. Space launch vehicles project increased 110 per cent, while controller functions increased 102 per cent.

Some 2,000 new members were added to Con-Trib-Club during the drive, bringing total membership to over 15,225.

## XMAS SECURITY RULES ISSUED

Astronautics employees in the San Diego area are reminded of security regulations issued in conjunction with the holiday season.

ALL employees departing Astro facilities for lunch on Dec. 20 or Dec. 31 will be required to clock in and out at pedestrian gates.

In-plant luncheons will be permitted, but must be confined to regular lunch periods. Out of plant luncheons are discouraged. No alcoholic beverages may be brought inside secured areas. Food and warming equipment may be brought inside, but catered meals must be picked up at security gates.

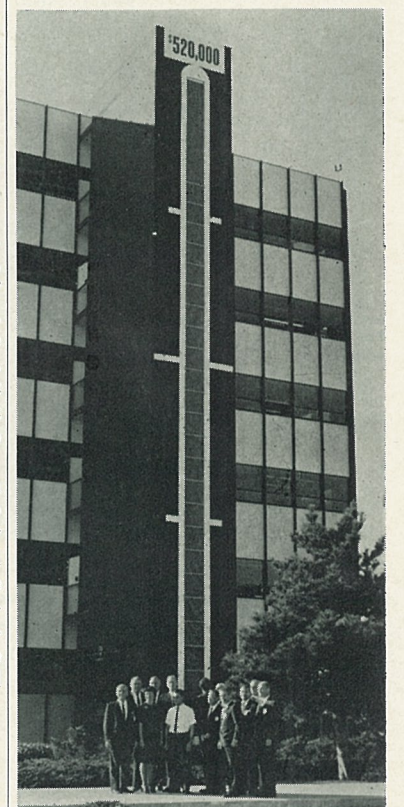
Packages brought into or taken out of the plants are subject to inspection. Authorized property passes will be required for all sealed packages, including those with Christmas wrappings. Unsealed packages containing obviously personal gifts will require no property passes for removal from plants.

## Atlas Weapon Folk Plan Xmas Dance

Atlas Weapons System project at Astronautics will hold its annual Christmas party this year on Dec. 30 at Del Webb's Ocean-House.

Dinner will be from 7:30 to 8:30 p.m. and dancing from 9 p.m. to the music of Clyde Helmer's Band.

Tickets are \$4 per person, available through F. H. Bloeschies, ext. 1587, Plant 19.



**OVER THE TOP**—Recent Con-Trib-Club membership drive at Astro reached \$520,000 goal shown on giant thermometer. Some 92 per cent of employees are Con-Trib members. Con-Trib-Club's Employees' Board of Directors pose shortly after pledging \$400,000 to San Diego United Community Services drive.



## Randazzo Gets Material Post For Centaur

Joseph S. Randazzo has been named manager of material—Centaur at GD/Astronautics by Grant L. Hansen, vice president and program manager—Centaur.

Hansen indicated Randazzo will be responsible for all aspects of Centaur material management, including those performed in Astro departments to support Centaur. Randazzo has served as manager of subcontract management since late 1962. Prior to this he was assistant to the director of material, a material project administrator and a staff assistant in material department.

A native of Rochester, N.Y., Randazzo served in the U.S. Army from 1936 until 1958, attaining the rank of major. He worked with the National Security Agency, Washington, D.C., before joining Astro in 1961.

## Log Book Entries



GD/Astro honored three more 25-year men recently. From left, they are W. T. Reiff, Dept. 525-0, J. F. Holdener, Dept. 527-6, Jack Cox, Dept. 146-3.

## Service Emblems

Service emblems due during the period Dec. 1 through Dec. 15.

Twenty-five-year: Dept. 401-1, W. H. Megown; Dept. 501-0, W. W. Withee.

Twenty-year: Dept. 140-0, Elizabeth W. Wright; Dept. 143-3, F. A. Baugh; Dept. 388-0, C. A. Sheppard; Dept. 660-0, Harry Weimer; Dept. 714-0, G. F. Marcella; Dept. 759-0, J. E. Bryans Jr.; Dept. 989-3, B. B. Shaffer.

Fifteen-year: Dept. 336-1, C. D. Taylor; Dept. 382-1, W. R. Grosse; Dept. 528-2, W. H. Bond; Dept. 405-0, J. L. Beck; Dept. 972-0, J. T. Evans Jr.

Ten-year: Dept. 032-4, Valerie F. Knettle; Dept. 036-1, M. M. Cox; Dept. 250-5, C. A. Hanson, Hubert Reina; Dept. 336-1, J. H. Athey; Dept. 344-3, L. A. Goosman; Dept. 377-2, P. W. Blake; Dept. 452-0, G. L. Criger; Dept. 511-0, R. R. Lanflisi; Dept. 592-0, Shirley S. Barry; Dept. 673-0, Jessie B. Franklin; Dept. 682-2, S. A. Meade; Dept. 756-1, M. J. Hubbard; Dept. 758-0, L. O. Pelton; Dept. 958-7, S. J. Adams; Dept. 959-1, Gus Ellis.

### PLATTSBURGH AFB

Fifteen-year: Dept. 394-2, E. A. Davis.

### WARREN AFB

Ten-year: Dept. 388-1, W. E. Stewart.

## Official Notices

### UTILITY SHUTDOWN

All electrical power to Bldgs. 1, 2 and 3 at Plant 71 will be shut down between 7 a.m. and 3:30 p.m., Dec. 14 and 15. During those hours on Dec. 15, power to the east half of Bldg. 4 (except graphic reproduction) will be shut down, and no power will be supplied to the east half of Bldg. 4 or to Bldg. 26 during those hours Dec. 15.

All air conditioning in Bldg. 4 will be shut down from 7 a.m., Dec. 14, to 11:30 p.m., Dec. 15, except for the business data processing area.

D. E. Merriam  
Plant Engineering Supervisor

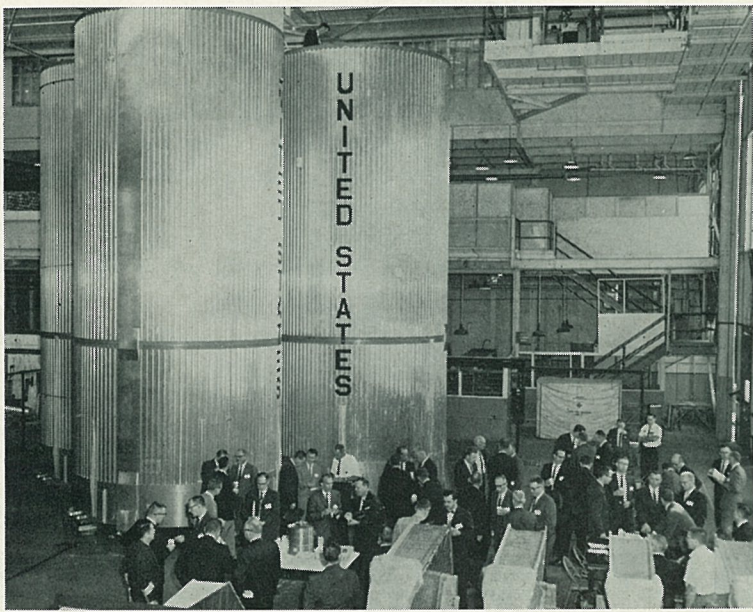
## General Dynamics NEWS

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ONCE-OVER — NASA team accepts second and third Little Joe II launch vehicles during recent inspection at GD/Convair plant. At San Diego for formal acceptance in mid-November were 23 NASA representatives, and interested visitors from North American and Aerojet Corp.

## Consolidation of Dept. 290 Labs To Provide Improved Response

Improved response to accelerating demands for advanced manufacturing technology is expected

from recent consolidation of General Dynamics/Astronautics applied manufacturing research and process development (Dept. 290) laboratories at Plant 19.

All Dept. 290 labs—welding, plastics, chemical, physioptics, special projects, machine shop and electronics—are now located in the northeast portion of Bldg. 1 at the former GD/Convair Plant 2.

Expanded facilities in the new location permit handling of larger hardware items, while physical proximity of laboratories working in various disciplines permits better coordination and information interchange.

Major lab activities are the development of production applications for specific technologies, and advanced research and development work related to long range projects.

A part of production engineering under Manager G. A. Gros-saint, the department is headed by V. G. Mellquist, chief, Plant 19, ext. 1365.

Key Plant 19 contacts are: Manufacturing development program control, D. L. Ingram, ext. 1363; department publications, J. H. Mang, ext. 671; manufacturing specification request, and process materials and equipment, R. F. Grissom, ext. 2737; chemical, plastics research and development, V. H. Folsom, ext. 2737; advanced welding research, G. J. Langford, ext. 617; forming, machining and lab operations, C. P. Rolla, ext. 2005; electronics, W. W. Williams, ext. 2005; welding production support, T. E. Kerr, ext. 720.

Contacts remaining at Plant 71 include: welding technology center, D. A. Provancher, ext. 1941; manufacturing specifications liaison, H. E. Manning, ext. 648 (general), E. J. Estlick, ext. 2718 (plastics), J. H. Ward, ext. 3529 (electronics), manufacturing materials liaison, P. V. Cheney, ext. 648.

## Retirements

HATTENDORF—George E., Dept. 143-4. Seniority date, March 10, 1958. Retired Oct. 24.

HOFFMAN—P. P., Dept. 576-3. Seniority date, Feb. 11, 1957. Retired Oct. 15.

## Births

ENGLEDOW—Daughter, Myra Lee, 6 lbs., 10 oz., born Nov. 26 to Mr. and Mrs. L. E. Engledow, Dept. 125-0.

WASHINGTON—Son, Kevin Leslie, 9 lbs., born Nov. 19 to Mr. and Mrs. Howard A. Washington, Dept. 962-3.

## Personals

Your kind expressions of sympathy at the loss of our loved one are gratefully acknowledged.

The family of  
C. M. Tyner, Dept. 143-7.

## Deaths

HURLEY—Bernard, Dept. 756. Died Nov. 30. Survived by wife, Bernice; two adult sons.

## 'Do Good Work' Craftsmanship Program Will Emphasize Quality

(Continued from Page 1)

will win temporary possession of a roving trophy, and a permanent Craftsmanship decal for display in departmental spaces.

Individual contributions to departmental performance will also be recognized.

Contest data are drawn from the existing GD/Astro Quality Report, and applied, through formulas, to a base line which has been established during the six months just concluded.

Results are reported in terms of performance relative to this base.

Initial awards will be made in February, with subsequent awards monthly thereafter.

★ ★ ★

## DEMPSEY ADDS STRONG SUPPORT

Impetus for the "do good work" program springs from GD/Astronautics' highest executive level.

Some months ago, President J. R. Dempsey established a management committee to explore the subject, and develop means to rally employee enthusiasm. Committee findings have received full endorsement and support of the entire executive staff.

"The quality of our product is

its major recommendation to our customers," Dempsey said. "And quality is something to which each of us can contribute—whether our work station is a desk, a milling machine or an assembly fixture.

"It has been said that a quality product is the result of two things: application of knowledge and attention to detail.

"We believe our employees are—without exception—fully qualified to perform their assigned tasks. We constantly strive, through on-the-job or formal training, to improve their knowledge and skill at their work.

"Attention is another matter. It is a personal ingredient which only the individual can bring to his job.

"Mistakes are unthinkable in our business. Our products are the key, not only to our own job security, but to our country's future role in space.

"During the Mercury program (in which we can take justifiable pride), the Astronauts placed their lives in our hands. We vindicated their trust, and in doing so began the 'four-for-four' tradition which we must now maintain.

"The heart of the matter lies in Gus Grissom's request, only months before his epic flight. He asked then; I ask you now: "Do good work."

## Christmas Activities Functioning For Benefit of Less Fortunate

Beginning this weekend and continuing through the holiday season, General Dynamics/Astronautics employees will turn their thoughts to helping the less fortunate enjoy a traditional happy holiday.

Saturday (Dec. 14) some 150 needy children will be feted in what has become an annual occasion—a full-scale Christmas party staged at ARA Clubhouse. Children will be in the intermediate ages (pre-teens and teens), a group often overlooked in favor of younger children.

Astro's Employees' Con-Trib-Club has set aside \$3,000 to finance the party. It will be used

for a full outfit of clothing for each attending youngster. Astro Wives Club selects clothing and directs wrapping of all gifts. In addition, this group will use \$270 earned at a card party to add a personal gift or toy for each youngster.

Handling the party itself will be the ARA Employees' Council with Bud Mecham and Gil Hutter as co-chairmen.

Salvation Army assists in supplying the names of needy youngsters and in overall administration of this program.

Many others also take part. Prophet Co. provides a tree and food for the party and its employees turn out to prepare and serve the food. Davidson Brothers help provide candies, nuts and fruit for each stocking. Firms supplying these two organizations traditionally add to the affair with special gifts of their own.

In the past some departments or groups have assisted through other gifts for the children, sometimes cash and even baskets of food for the families of children.

Throughout Astro departments, groups and functions are proceeding with their own plans to "adopt" needy families, provide special services to groups and a number of other projects.

Employee services has the names of about 20 needy Astro families and will accept others, or pass along information to any group interested in helping out. Inez Schurr, ext. 2328, will assist in this effort.

Money tossed in the Bldg. 2 reflection pool, plus coins or bills placed in Christmas candles at all employee exits will be used to assist needy families, with a preference to Astro families first. If all known Astro needy families are provided for, the fund will go to help others outside Astro.

## Correct Addresses Will Expedite W-2s

GD/Astro employees eager to receive W-2 Forms (for tax purposes) as soon as possible, can speed the process by insuring that the correct address appears on their next pay check stub.

Lack of address, or an error in the one shown can be corrected by filing a Change of Address card (available at all time clocks) by Dec. 20.

## Air Force Reserve Members Sought

Former Air Force enlisted personnel among GD/Astro employees in San Diego have been invited to explore opportunities resulting from association with a reserve unit.

Frank H. King, AF Reserve captain, and employed in GD/Astro's AFPRO, issued the invitation to meetings of the 452nd Troop Carrier Wing, tonight (Dec. 11), 7:30 p.m., American Legion Hall, 8118 University Ave., La Mesa, and on Dec. 17, 7:30 p.m. in Stardust Room, Stardust Hotel.

King cited paid training periods and retirement benefits as incentives to unit membership.

## GLENN KEACH NEW PRICING DIRECTOR FOR CORPORATION

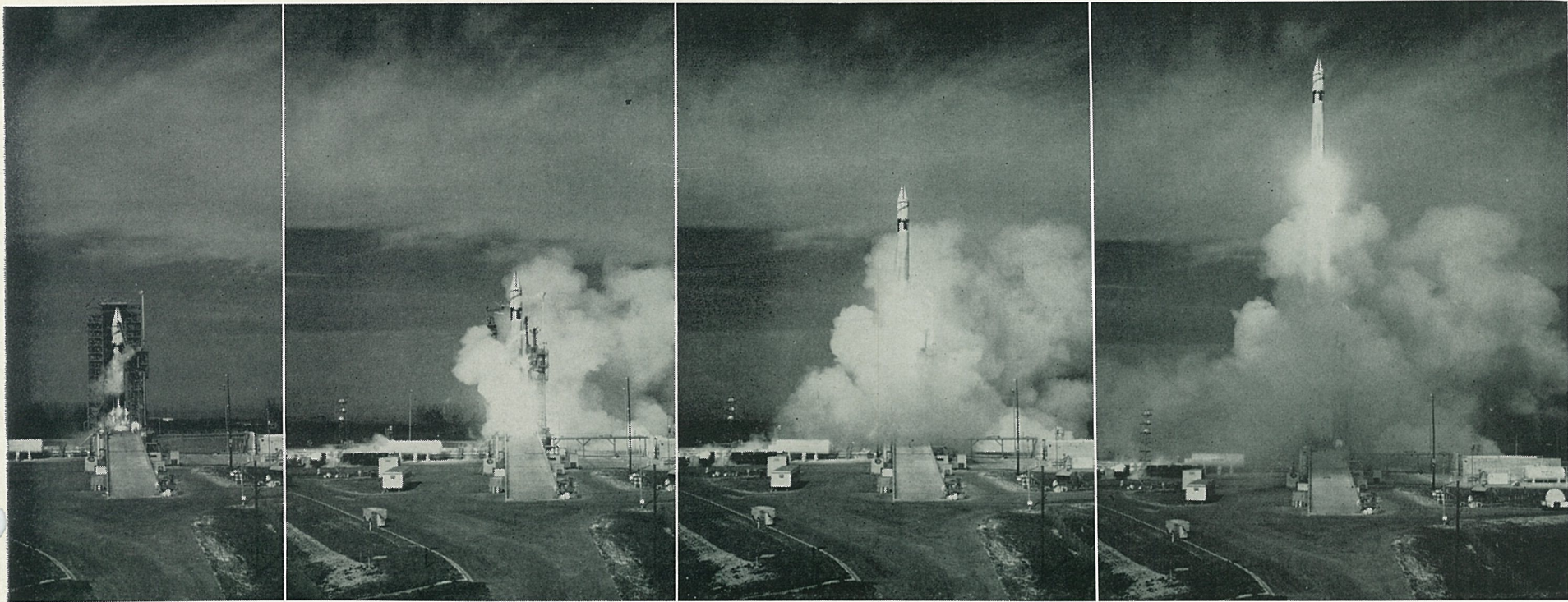
Glenn W. Keach, formerly assistant to director of finance for



Aero-space division of Boeing Company, has joined General Dynamics as director of pricing, reporting to C. L. Meador, vice president-contracts and pricing, in the Corporate Office.

Keach, who attended Compton Junior College and University of California, was with North American Aviation from 1938 to 1962 where he was chief of contract proposals and chief of estimating, as well as holding other executive positions.





**THE LAUNCH**—This was how Atlas-Centaur appeared to observers at Cape Kennedy. Sequence probably does not cover more than 10 or 15 seconds from instant

that engines ignited and umbilical snapped back to point where Atlas-Centaur was well on its way skyward.

## Atlas and Centaur Team Perfectly In Excellent Launch From 36-A

(Continued from Page 1)  
per pound of propellant than any chemical combination of fuels now in use. Thus, it (Centaur) has broad application to many programs. For instance upper stages of three different Saturn vehicles will employ this fuel, as will NERVA (nuclear engine for rocket vehicle applications).

Complex 36-A at Cape Kennedy was the Nov. 27 launch site for AC-2. Launch came at 2:03 p.m. (EST) after an almost letter-perfect countdown marked by one minor hold (for ground support equipment adjustments) and one major one (for weather).

Dan Sarokon was Astro test conductor over the 75-man Astro launch crew. Roger Lynch, Centaur launch operations manager, acted as chief test conductor.

Some 200 cameras of every description focused on Atlas-Centaur Two as it rose slowly from the pad, gained momentum and arched into the heavens. Within a short span of time a

spokesman signaled success with "It's over Africa and through the gate."

When Centaur engines were ignited deep in space for a 380-second run period, they became the first hydrogen-liquid oxygen engines to operate in space. When the entire Centaur vehicle (tanks, engines, nose fairings, etc.) went into orbit, it became the heaviest satellite yet launched by this nation.

Because this was a research and development flight, four major test objectives were established. They were to demonstrate the structural integrity of the Atlas-Centaur separation system; demonstrate the ability of the Centaur propulsion system to be ignited in space and to burn for 380 seconds; and evaluate the accuracy of the Centaur guidance system.

In addition, the mission helped to evaluate Atlas-Centaur vibration, elastic behavior and structural adequacy; determine en-

vironmental levels; verify trajectory and orbit parameters; and evaluate performance of major subsystems.

To verify these many objectives, the entire Atlas-Centaur Two was heavily instrumented. Five telemetry systems constantly recorded 326 different data measurements aboard Centaur and 167 measurements aboard Atlas. They cranked out 7,000 items of information per second, collecting on the ground over five million items of flight information by the time Centaur engines cut off. As Centaur coasted in space additional environmental data was transmitted for about 10 hours (life of batteries).

Centaur is a National Aeronautics and Space Administration program directed by the Lewis Research Center.

Two days after the launch, NASA announced that "in all respects, performance of the vehicle (Centaur) was very close to that planned."

## Improvements Mark Centaur

In outward appearances, Atlas-Centaur Two closely resembled the initial Atlas-Centaur vehicle launched in May, 1962.

However, it included many significant changes, both in the space vehicle itself and in flight procedure.

For instance, there is a new engine chilldown procedure prior to launch in lieu of extended chilldown on separation of Atlas and Centaur.

Insulation panels and nose cone fairings were not jettisoned during this flight, since no payload was carried. There was also new and improved RL-10 engines and a new separation system which involved a linear-shaped explosive charge to cut through the interstage adapter and retro-rockets mounted on Atlas and used for the first time.

Inside the Centaur tank were new baffles to prevent sloshing.

## Next Centaur Will Be a 'C'

Atlas-Centaur Two was made up of Atlas 126-D and Centaur 2-B. This alphabetical designation refers to the vehicle series.

Later in the Centaur program, as improvements are made to the vehicle, new model series will be used. For instance, a "C" series Centaur space vehicle will make the third flight. Initial operational configuration will be designated series "D."

Centaur 1-B is being used for static-firing tests at Sycamore Canyon, while a permanent-tank-type arrangement is used for tests at Edwards Rocket Site.



**HEADS UP**—Among watchers atop Hangar J in Astro compound at Cape was Roger Lewis, who drops binoculars momentarily. Upper photo is time exposure of 3½ minutes, using infrared film. At top of photo, booster has been jettisoned, AC-2 is running on sustainers and verniers at something like 8,000 ft. per second, at 90 miles altitude.

## Studies Leading to Centaur Began in 1956; Astro Received Contract Two Years Later

Centaur evolved from GD/Astro (then Convair) studies in 1956 of strategic high-altitude satellites for early warning, global surveillance, communications and weather reconnaissance.

Initial Centaur was conceived for the primary purpose of developing liquid hydrogen technology.

Advanced Research Projects Agency awarded Astro a con-

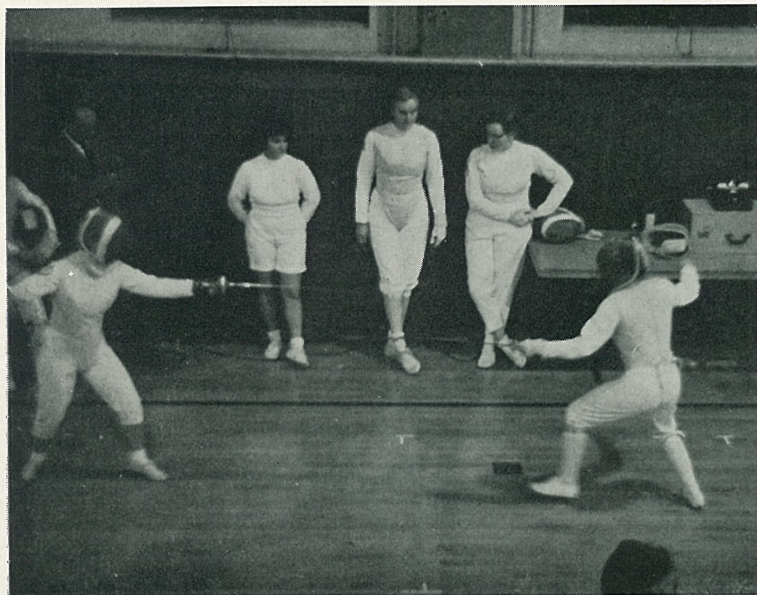
tract in 1958 to design, develop, construct, test and launch six Atlas-Centaur vehicles.

In 1959 administration was shifted to NASA and in June, 1960, to NASA's Marshall Space Flight Center. In October, 1962, the program shifted to Lewis Research Center and subsequently a DX priority was assigned to the program.



**ELATION**—Two photos taken in blockhouse of Complex 36-A reflect tension and then elation. In foreground are Daniel Sarokon, test conductor, Roger Lynch, Centaur launch operations manager, Tom Chitty and Tom Hill, assistant conductors. Among those in background are K. W. Jeremiah, Astro assistant program director-Centaur, and Bob Gray, head of NASA's Goddard Field Project Branch at Cape.





**PREVIEW**—Scenes similar to these will be repeated during Invitational Tournament hosted by San Diego Fencers, Dec. 15 in ARA Clubhouse. At right, ARA Commissioner Mike Hurley and Maxine Mitchell, Olympic fencer, assist Mrs. Hurley in connecting electrical scoring device prior to match. At left, Mrs. Hurley faces opponent from Pomona College, as, in background, GD/Convair daughter Marlene Qualiato, Mrs. Mitchell, and another Pomona fencer watch.

### Cafeterias Slate \$1 Holiday Dinner

General Dynamics Corporation cafeterias served by the Prophet Co. throughout the San Diego area will present their traditional Christmas dinners Thursday, Dec. 19.

For \$1 employees will have their choice of either ham or turkey entrees, plus a full dinner of vegetables, beverage, pie, salad, rolls and butter. The ham entree will include sweet potatoes, while turkey will be accompanied by dressing and cranberries.

### Feminine Speakers To Host Husbands

Delta Toastmistresses will entertain their husbands and guests at a Christmas party this Saturday, Dec. 14, at the Old Heidelberg Restaurant, 1323 Fifth Ave.

Program will be arranged around the Yuletide theme with all business dispensed with, said the group's president, Barbara Macdonald of GD/Electronics.

Cocktail hour starts at 6:30 p.m. with dinner at 7 o'clock. Price, including tax and tip, is \$3.50 per person.

Members have until this Friday to make reservations by calling Barbara at Plant 1, ext. 1420.

### Quick Thinking in Emergencies Earns GD/Astro Commendation

Frederick H. Reid (Dept. 781) last week received a letter of commendation, plus the personal thanks of General Dynamics/Astronautics, from President J. R. Dempsey.

Reid was cited for two specific incidents in which he "exhibited keen judgment, courage and intense loyalty." Both were credited with preventing material damage, personal injury and possible death.

On Nov. 5 Reid disconnected the line to a faulty electric drill that endangered the life of a

### Fencers Will Compete In Invitational Tourney

San Diego Fencers Club, to which several General Dynamics employees belong, will host its annual invitational fencing tournament Dec. 15 in ARA Clubhouse, directly east of GD/Astro main plant.

Entries include representatives of Pomona College, San Diego State College, Imperial Valley Fencers, Los Angeles Fencers Club, West Los Angeles YWCA, and others. Attendance is expected to top last year's record 63.

ARA Commissioner Mike Hurley said competition for both men and women will be included in the all-foil event. Preliminary matches, starting at 10:30 a.m., will use standard scoring, while electrical scoring devices will be

### Joint Camera Club Banquet Scheduled

Joint ARA-CRA camera club will hold its annual banquet and Christmas party Dec. 15, starting at 6:30 p.m. at King's Inn, Mission Valley.

Included on the agenda are presentation of contest awards, plus showing of a movie, "It Suddes and Suddes and Suddes," produced by Sid Laverents, GD/Astro Dept. 951-5.

contractor employee working at Astro who was being shocked and could not let go of the drill until Reid moved in to help.

Earlier, Reid extinguished a flash fire in a drainage sump that could have spread throughout the entire electronic manufacturing area in Bldg. 33.

Dempsey pointed out that "thank you" seems a small award for Reid's actions and added "I want you to know that all of us do thank you and admire you for your selfless, exemplary action."

called into play for semi-final and subsequent rounds.

Attending will be Maxine Mitchell, nationally known as a contender in Olympic and other major fencing events.

General Dynamics employees and their families have been invited to view the matches without charge throughout the day.

### Rally Draws Field of 153

GD folk who participated in ARA Sports Car Club's Photorama V Rally Dec. 1 may see themselves in movies of the event to be shown at the club's meeting, 7:30 p.m., Dec. 17 in ARA Clubhouse.

Entries in this year's rally totalled 153. Winning car, a 1962 Alpine with driver Ronald Will and Judi Richardson, navigator, logged only a 2.03-minute error. In second were John Hammond and Linda Love who erred 2.43-minutes in their 1959 Porsche, while a 1961 Corvette with L. H. VanGessel and Randall Brown finished third with a 2.48-minute error.

Other trophy winners, in driver-navigator-error time order, were:

Gladys Hawkins, Bette James, 2.69; Neal and Charles Clark, 2.77; Jim Glasgow, Sandy Smolanovich, 2.92; L. A. Gaudreau, Bill Mears, 2.95; D. L. Hogge, Bonnie Parker, 3.03; James and Mary Moroney, 3.25; Jerold Larson, William Carpenter, 3.43.

Also Bill Shupe, Ralph Wilson, 3.46; Don and Nancy Westphal, 3.47; Joyce and Ken Partain, 3.60; Norman Lino, R. E. Wright, 3.73; and Ken and Myrtle Kelling, 3.73.

### Recruiting Emphasized For Astro Players

Emphasis will be on "recruiting" at the meeting of Astro Players, ARA drama club, at 7:30 p.m. today (Dec. 11) in ARA Clubhouse, as the group seeks to strengthen its ranks in preparation for its spring production.

"No experience is necessary," is the slogan emphasized by John Cone, director and club president, who explained that all employees and members of their families are welcome to join the group.

"Prospective members need only be willing to learn," Cone said. "More experienced Astro Players are eager to introduce them to any area of theater in which they are interested."

Up-coming production of the little-theater group is "The Curious Savage" and will feature well-known Lillie Mae Barr as Mrs. Savage. All other roles are open, with casting to begin in February. The play opens March 26.

### INSTRUCTION SOCIETY MEETS DEC. 19

General Dynamics members of the San Diego Chapter of the National Society for Programmed Instruction are reminded of the next meeting Thursday (Dec. 19). It will start at 7:30 p.m. in the Convair cafeteria, Pacific Hwy.

## C-141 Empennage Components Together Make Imposing Array

All the components and parts that go into one C-141 empennage were spread out last week to show the many different items that General Dynamics/Convair fabricates for a single tail for the huge Air Force cargo jet transport.

North end of Bldg. 2 production area was filled with the bright gold-burnished parts of the ninth C-141 empennage before they were packed for shipment. They will leave the San Diego plant tomorrow for the East Coast. Arrival at Lockheed-Georgia Co.'s Marietta plant will be about the same time next week.

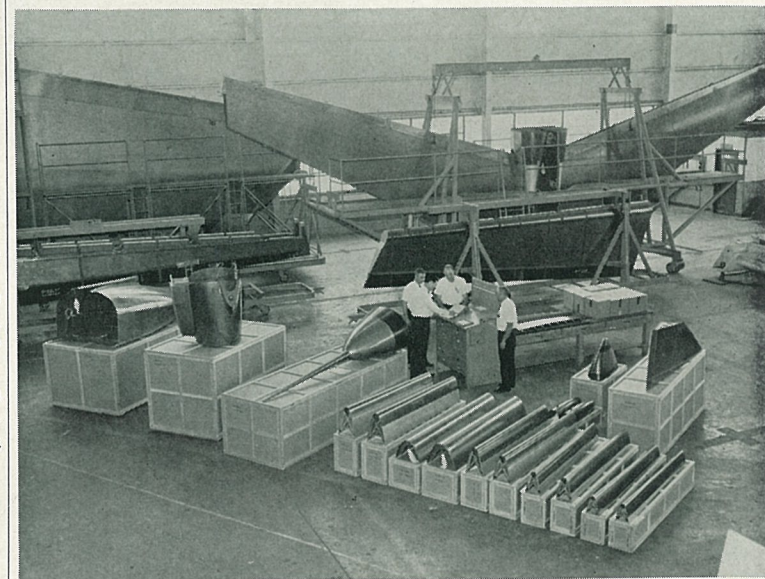
Two cars, one of them the specially built hydro-cushion railway

freight car, will carry the 21 major empennage assemblies.

The huge horizontal and vertical stabilizers travel side by side in the hydro-cushion car. Sixteen boxes hold the other major assemblies: leading edges, vertical trailing edges, horizontal stabilizer tips, LORAN antenna, HF antenna and boom, forward bullet, aft bullet, intermediate fairings.

Small loose parts such as bolts, fittings, small hardware items are packed in seven additional cartons.

GD/Convair is building 127 of the tail sections for the AF plane under a subcontract from Lockheed-Georgia, prime contractor.



**TAIL PARTS**—Components that go into one C-141 empennage fill area in north end of GD/Convair production building before shipment this week. Checking off items is Mel Thurmon, Lockheed source control inspection representative, flanked by E. E. Miller, Dept. 141 assistant foreman; Bert Mundt, Dept. 48 inspection leadman. N. P. Pearson, in charge of C-141 production at GD/Convair, stands at right.

### NATIONAL VENDORS MEET SCHEDULED IN SPACE MUSEUM

Three General Dynamics men will be 1964 national officers of Space Flight and Equipment Association (SAFE) which will hold a national vendors meeting, Dec. 13 and 14 in San Diego Aerospace Museum.

At the meeting, manufacturers and distributors of survival, rescue and personal flight equipment will display products to flight safety specialists from aerospace industry, military and government organizations.

SAFE's national president for 1964 will be R. L. Wolf, GD/Astro Dept. 594-9; H. T. Webster, GD/Astro Dept. 557-2, will be president-elect and 1965 president; and R. J. Elling, GD/Convair Dept. 6, secretary.

Technical papers by B. F. Pierce and Bob Brazell of General Dynamics will be presented.

Officers of SAFE's San Diego chapter next year include J. A. Johnson, Dept. 594-9, president, and S. Congdon, Dept. 594-5, vice president, both GD/Astro.

### Skaters to Continue Sessions at Plaza

General Dynamics Ice Skating Club will continue its regular Thursday private skating sessions at Mission Valley Ice Plaza throughout the holidays, including Dec. 26 and Jan. 2.

Discount tickets available at all employee services outlets continue to be honored: 25 cent discount at regular sessions, 35 cents off at the club's sessions, 6:30 p.m., Thursdays.

### 'San Diego' on Sale At Discount Price

A new edition of "Neil Morgan's San Diego" is available for purchase by Astro employees at 25 per cent discount from all major employee services outlets.

This year's edition of the popular volume is illustrated with several pictures of GD/Astro facilities and others by Astro photographers. Regular price of \$2 is reduced to \$1.50.

### Gunners Fall Short, Pot Raised to \$105

The pot was sweetened but unclaimed at CRA-ARA Gun Club's November Troy-type trapshoot when no sharpshooter could score the 50-straight to collect.

Seventeen competed in the Nov. 29 evening shoot at Gillespie Field Range with Bill Shrode the only one to score 25-straight in the 16-yd. event. He got \$12.50.

He and two others had a three-way tie with 47 out of a possible 50 in both 16-yd. and handicap matches to each collect \$4.25. The others were L. P. Johnson and John Beemer of GD/Astro.

It would have taken 50-straight in the combined handicap and 16-yd. events to win the big cash prize, which now stands at \$105.75.

### GD MEN ELECTED BY SPACE SOCIETY

A General Dynamics slate of officers was announced at the Dec. 5 meeting of the Aerospace Electrical Society's San Diego Chapter.

G. C. French of GD/Astronautics will head the group as president, succeeding T. W. Ochodnick of GD/Convair.

Harvey Seibert, also of GD/Astro is new vice president; R. C. Worley of GD/Electronics, secretary; and A. A. Fabbri, GD/Astro, treasurer.

Two GD men will serve on the executive committee. They are E. P. Cormier, GD/Astro, and J. A. Decosta, GD/Convair.

New officers assume their duties the first of the year and will conduct the next meeting, set for the first Thursday in February.

### Salvage Schedule

Salvage yards at both GD/Convair and GD/Astronautics will be closed on the holiday weekend before Christmas. However, the regular alternating Saturday schedule will be maintained at both GD locations on all other weekends. Schedule will be:

GD/Astro—Dec. 14, 28.  
GD/Convair—Jan. 4. (Closed Dec. 21.)



**SPECIAL HONORS**—Frederick H. Reid, right, of Dept. 781 at Astronautics receives letter of commendation and thanks from President J. R. Dempsey. Reid was cited for two specific incidents when he helped prevent material damage, personal injury and possible death.



## Astro Program Retrains 2,600

Approximately 2,600 General Dynamics/Astronautics employees will have completed one of the largest retraining programs yet conducted when current configuration control classes end in the near future.

Aimed directly at improving product reliability, this program got under way in early October. Personnel from a majority of Astronautics departments have taken part. Emphasis was in the San Diego area, although special classes were conducted at both Atlantic and Pacific Missile Ranges for Astro folk.

Jack Croft, chief of educational services, coordinated the program with Dick Forrest and Hal Rubin serving as instructors.

Two main objectives were sought. First was to acquaint or to renew acquaintance with current configuration control system flow from engineering drawing through manufacturing planning and fabrication; second, to review roles in overall planning.

As many as four classes were held each day. Classes met for one and a half hours each.

## UNCASHED CHECKS AN ASTRO PROBLEM

Uncashed payroll and travel checks issued by GD/Astronautics continue to create problems with general accounting.

Checks totaling in excess of \$50,000 are still outstanding, some dating back to 1956.

Astronautics-issued checks, both payroll and travel, are intended for payment within 30 days. After that time they are no longer negotiable. Most banks and businesses refuse to cash them after 30 days. When these so-called "stale" checks are presented for payment, paying institutions will, for the most part, contact Astro directly by telephone before honoring them.

To avoid possible hold-ups and delays in receiving payment, employees holding any type of check no longer negotiable (older than 30 days) are urged to contact Warren Jones of financial accounting for the purpose of obtaining "fresh" checks.

## Asst. Patent Counsel For Astro Appointed

Appointment of Earl F. Kotts as assistant patent counsel at General Dynamics/Astronautics, reporting to Carl R. Brown, patent counsel, has been announced by Chief Counsel H. Cushman Dow.

Kotts joins GD/Astro from Ryan Aeronautical Co., where since 1961 he served as patent administrator, handling all patent matters for that firm.

He is a native of Michigan, with studies in mechanical engineering at Wayne University and Henry Ford Community College (Dearborn, Mich.). He holds a law degree from Detroit College of Law.

A former Naval aviator, Kotts has been engaged in patent matters since beginning his career.

## Applied Research Lab to Hold Party

Astronautics' applied research laboratories personnel will stage their second annual Christmas dinner-dance Saturday (Dec. 14) at Hotel del Coronado's Coronet Room.

Social hour is at 7 p.m., dinner at 8 p.m. and dancing from 9 p.m. to Charlie Bertolino's band. Dinner and dancing is \$6 per person with dancing tickets at \$1 per person. Call ext. 2691 for information.

## ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information, call ARA Headquarters, ext. 1111.)

★ ★ ★

**ASTRO LENS** — Christmas dinner party, Dec. 15, 6:30 p.m., Kings Inn.

**ASTRONOMY** — Observation program "Above San Diego," club observatory, ARA Area, each Friday, 8 to 10:30 p.m.

**ASTRO NOTES** — Meets and rehearses each Monday, 7:30 p.m., ARA Clubhouse.

**BRIDGE** — Master point events Dec. 13, Dec. 27, both 7:30 p.m., ARA Clubhouse. Christmas party, Dec. 28, La Mesa Cotton Patch, reservations from Mrs. Ann Stephens, 583-3043.

**CHESS** — Play every Thursday, 7:30 p.m., ARA Clubhouse.

**DRAMA** — Astro Players meet 7:30 p.m., today (Dec. 11), ARA Clubhouse. Tape recording session.

**FENCING** — Invitational tourney opens 10:30 a.m., Dec. 15, ARA Clubhouse. Spectators welcome.

**HI-FI/MUSIC** — Electronics workshop open 7 to 9:30 p.m., Monday through Thursday, ARA Clubhouse.

**RIDING** — Christmas party, noon to 6 p.m., Dec. 15, ARA Clubhouse. Junior Riders meet 2 p.m., Dec. 21.

**SKIN DIVING** — Meeting 7:30 p.m. today (Dec. 11), ARA Clubhouse, features Jim Stewart of Scripps, discussing recent developments in small research submarines. Scripps film on noxious marine life.

**SPORTS CARS** — Meeting Dec. 17, 7:30 p.m., ARA Clubhouse.

**TOASTMISTRESS** — Serra Mesa Club meets 7:30 p.m., Dec. 16, ARA Clubhouse.

## Parade Entry, Party Mark Riding Events

Year-end activities of Astro Equestrians, ARA riding club, kicked off with entries sponsored by the group's Junior Riders in the North Park Toyland Parade last Sunday (Dec. 8).

The group will hold its annual family Christmas party with games, entertainment and refreshments, from noon to 6 p.m., Dec. 15 in ARA Clubhouse. Junior Riders will meet there Dec. 21 at 2 p.m. for elections.

## Bridge Club Planning Events For Year-End

Three year-end events scheduled by ARA Bridge Club will lead off with a master point award during play Dec. 13, and a special master point event will be held Dec. 27, both at 7:30 p.m. in ARA Clubhouse.

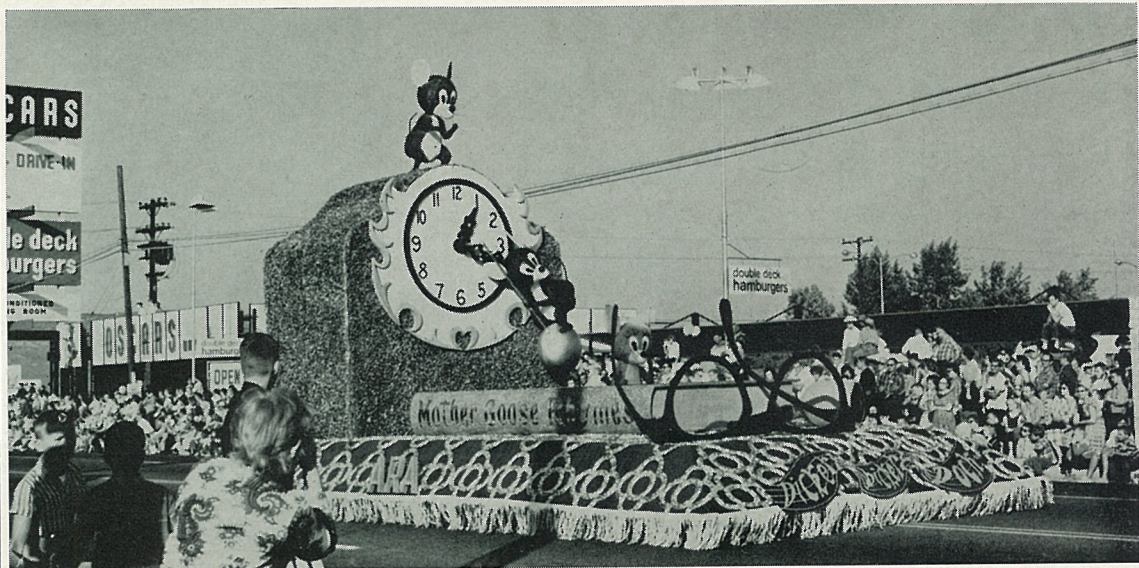
On Dec. 28, the group will hold a Christmas dinner party at La Mesa Cotton Patch, with reservations now being accepted by Mrs. Ann Stephens, 583-3043.

## SNOW CLUB TRIP TO ASPEN PLANNED

Reservations are now being accepted for an ARA Snow Ski Club trip to Aspen, Col., Jan. 18-25, with additional trips in the offing. Call Stan Stein, ext. 3643; Tibor Lodi, ext. 1085; Charlie Hill, ext. 2745; or attend club meetings the first Wednesday of each month, 7:30 p.m., ARA Clubhouse.



"How did the new car perform, Dear?"



EN ROUTE—Pendulum swinging, hands turning, enveloped in heady, carnival melody of Band-organ, ARA's award-winning float entry moves along route of El Cajon Mother Goose Parade.—Photo by Dave Mathias.

## ARA'S Float First Again; 'Hickory' Theme a Wow

ARA once again finished "in the money" with its float entry this year in the El Cajon Mother Goose Parade, winning top honors in the "major commercial" division.

The parade, Dec. 1, climaxed three months of intensive effort by a dedicated band of GD/Astro employees. The project was spearheaded by Commissioner Chuck Ogle, with Ezra Johnson, ARA president, leading construction efforts.

Jerry Peddie, Dept. 290-1, followed his 1962 design efforts on the ARA entry which won sweepstakes honors, with a new design this year.

The float was built on a "Hickory Dickory Dock" theme, and represented a "king-sized" table top covered with gold lace on a blue field. At one end, a mouse perched atop a clock, while another swung from the pendulum as the hands turned.

A third mouse—attractive feminine variety—posed by a volume of Mother Goose tales, while a pipe and huge spectacles rested nearby.

ARA's Band-organ, concealed in the clock, provided background music.

Those who contributed to the float project are legion. One epic effort involved fabrication of 120 gold foil wreaths which made up

## Club's Electronic Workshop Installed

ARA Hi-Fi/Music Club's electronic workshop is now in operation in new quarters in the east wing of ARA Clubhouse.

The facility provides club members with a complete line of top-quality equipment for use in alignment, repair or construction of electronic and audio equipment. Hours are 7 to 9:30 p.m., Monday through Thursday.

Club membership costs \$2 per year, and is open to all GD/Astro employees and members of their families.

Details are available from ARA Commissioner Jack Jones, main plant ext. 2043; at the workshop; or at Hi-Fi/Music Club meetings, 7:30 p.m., on the second Tuesday and fourth Wednesday of each month in ARA Clubhouse.

## Chess Club Tourney Into Second Round

ARA Chess Club's championship tournament moved into its sixth round last week with Newton Grant, Dept. 958, defending champion, in the lead with five wins.

Close behind were Jack Horning, Dept. 756, and Stew Daniels, Dept. 158, each with three wins, a tie and a loss.

## ASTRO DUO HEAD SOCIAL CLUB

GD/Astro's Emily Trapp and Bob Kelly are officers of a local social club, the Revelers, which will hold an open New Year's dance, Dec. 31, in Century Room, El Cortez Hotel, public invited.

the lace tablecloth, and were made (12-hour effort) by Irene Milsap, Floy Allen, Margaret Poetee, Helen Kress of Dept. 401, and Mrs. Johnson.

Tom Rodriguez of Dept. 290 provided all lettering; Ben Lachance and Art Smith fabricated the pipe; Ray Parga and his Trailer Club made the book; and Bud Davies worked on the Band-organ sound effects.

Ogle drove the float in the parade, with Roy Kirkeby as copilot. Johnny Creighton and Kirkby's son coached the behemoth through the route, and sons of Davies and Dick Mitchell operated Band-organ and clock respectively.

## Bowlers to Vie For Paid Trips

In addition to the usual awards, all-expense trips to both regional and national tournaments will be at stake during January when the Astronautics Management Club stages a singles bowling classic.

Qualifying rounds will be held at 1:30 and 3:30 p.m. Jan. 11-12 and 18-19 with finals on Jan. 25-26 (2:30 p.m.). All events will be held at Mission Valley Bowlero.

The top five finishers in the finals will win an all-expense trip to the Mid-west (site yet to be determined) for the national tournament in April or May. And the top 20 men will be divided into five-man teams to represent the club in Zone "A" competition slated for Los Angeles in March.

All contestants must be members of the club, the National Management Association and the American Bowling Congress.

Entry blanks will be distributed in the near future. Information is available through F. L. Erwin, ext. 3509.

The January tournament is being billed as the Astronautics Management Club Singles (handicap) Classic.

## Jorge Zorrilla 'Diver of Year'

Jorge Zorrilla has received Astro Divers' "Diver of the Year" trophy, after compiling high point total in nine club events against 62 contenders.

Bill Howard was in second place for the honor, trailed by ARA Commissioner Cliff Kickbush and Herman Reichert.

The group will hold its annual Christmas party Dec. 14, this year in conjunction with CRA's Delta Divers. The event is planned for the Point Loma home of Eric Milnor, and reservations are being accepted by Carlos Richardson (party chairman), ext. 2924; Kickbush, ext. 3052; George Clark, ext. 1631; or Rod Johnson, ext. 1058, all at the main plant.

Divers in a club spearfishing event Dec. 1 at Del Mar brought up 43 lbs. of edible fish. Top man was Howard with 23 lbs.



FINAL HOURS—Score of enthusiasts met day before El Cajon Mother Goose Parade to put finishing touches on ARA float entry. From top: Chuck Ogle, float ramrod, standing, directs operation; Jerry Peddie, who designed float, lifts lady mouse into position; Ogle makes last minute check of nearly-finished float.

## Astro Quartet Busy With Performances

Astro Notes' barbershop quartet opened a seven-engagement run for the ARA choral group with a Nov. 30 appearance before El Cajon Antique Car Club. The entire chorus performed Dec. 6 at College Grove Center.

Year-end performance schedule includes appearances at Clairemont General Hospital, Dec. 16; Vauclain Home, Dec. 17; Sharp Memorial Hospital, Dec. 18; Mercy Hospital, Dec. 21.

## Knutson Tops Pistol Shoot by a Point

ARA Pistol Club's final November shoot found J. C. Knutson leading contender in master class of a .22 Camp Perry Police Course match, scoring 292 of a possible 300 points to top 291 by ARA Commissioner Bill Geopfarth.

Bill Dittmann led the experts with 286, besting Warren Ranscht's 281, while Carl Jensen fired 272 and Bill Worthington 229 in sharpshooter bracket.

Ralph Sanderlin won a Center-Fire Short National match with 284.



## Early Days

## Thousands of Company Photos Catalogued in 181 Volumes

Nearly 100,000 pictures portraying development and products of major General Dynamics Corporation divisions have been gathered together at the GD/Convair photography lab into what is probably the most complete pictorial history of the company and its beginnings.

Consolidation of all available prints from various sources, such as Corporate and GD/Convair public relations, and the photo lab itself, has made possible a historical print file covering the 40 years since the formation of Consolidated Aircraft.

For weeks, the Herculean task of sorting, identifying, and filing prints by subject and date was a full-time "spare time" project in the still photography section. Now the thousands of pictures have been filed in 181 volumes by subject and in chronological sequence for easy reference.

"We worked backwards," said Martin Miller, photography assistant supervisor, who directed compilation of the print file.

"Our first objective was to get all prints on hand of our latest aircraft, such as the 990 and 880 jet transports, into order. As we kept breaking down piles of pictures, we found that we had prints of practically all planes ever built by the company, so we decided to go all the way and do a good job while we were about it. Now we have a complete print file of GD/Convair's history and products as well as a representative cross-section of Pomona,

Fort Worth, and Astronautics products."

The picture history begins with shots taken in 1923 of Major Reuben Fleet's first Consolidated Aircraft location at the Gallaudet Aircraft factory in Rhode Island, and the infant company's first plane—the TW-3 trainer.

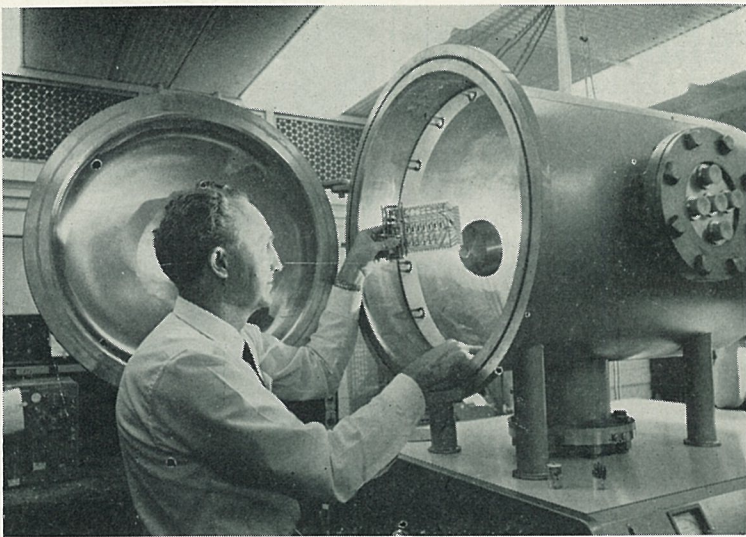
The 40 years and some 100 planes and missiles since are faithfully depicted.

The file has been divided into major fields of interest: general plant shots, important visitors and events, models of aircraft and other products subdivided into production, in-flight, combat, and other specific areas of activity.

For instance, one book contains a whole sequence of the construction and "launching" of the famous V Grand, 5,000th B-24. Pictures show that it was truly the "flying autograph" it was called from the tightly woven pattern of signatures of practically everyone working in the plant at the time it left the production line in 1944.

Rare shots show B-24 Liberators and PBV Catalinas in action in all World War II theaters of action. Planes ablaze, wings shot half through, nose sections and fuselages blasted—the craft that came back, and some that didn't—are perpetuated through the lenses of Air Force cameras.

Far-out dreams of the future, as devised by 1937 designers, still look as improbable today as witnessed by drawings of a twin-pusher flying wing.



BIT OF SPACE—E. W. Revell, supervisor of GD/Electronics-SD environmental lab, shows relative size of small electronic assemblies which will be checked out in outer atmospheric conditions in new environmental space chamber.

## Cold of 'Outer Space' Chills GD/E Test Units

A new environmental space chamber has been acquired by General Dynamics/Electronics-San Diego for the sole purpose of testing GD/E electronic components which will be traveling through space aboard vehicles of the future.

The chamber, located in the GD/E environmental laboratory area at Plant 1, San Diego, will be more suitable and less expensive for checkouts of small electronic assemblies than the available large environmental chambers, said E. W. Revell, laboratory supervisor.

Until now, all simulation of outer atmospheric temperatures and pressures had to be done in the large space chamber in Astronautics dynamics laboratory, he explained. The present miniature-sized chamber—2 feet in diameter and 3 feet in length—costs about one-tenth as much to operate and is just the right size for the

small electronic parts, which rarely weigh more than 30 lbs., and average nearer to 15.

Temperature range is from a high of 260 degrees Fahrenheit to a minus 170 degrees with use of liquid nitrogen as a coolant.

Components are bolted to aluminum plates and suspended from a stainless steel ring within the chamber. Temperatures are controlled by passing a refrigerant (similar to anti-freeze) through pipes welded to the lower side of the plate cradle.

Capabilities can be increased if necessary, said Revell. Solar simulation could be obtained by inserting a quartz window in the chamber's door and directing high-powered light beams through it. Higher temperatures could be reached with infrared heating, and lower by insertion of a liquid nitrogen shroud within the chamber.

## Vital Test Series Completed Paving Way For Surveyor Shot

Nearly a month prior to the successful test flight of Atlas-Centaur 2, General Dynamics/Astronautics, in cooperation with Hughes Aircraft Company, completed a vital series of tests for Centaur's key future assignment—soft landing the Surveyor spacecraft on the moon.

These were air conditioning tests of the Surveyor-Centaur configuration conducted at the El Segundo, Calif., Space Environmental Test Laboratory of Hughes' Space Systems Division (Aerospace Group).

Temperatures for both the spacecraft and Centaur will be rigidly controlled during the lengthy pre-launch countdown, and air conditioning systems will serve both vehicles before their Atlas-boosted flight from the Atlantic Missile Range.

Centaur's orderly "brain" generates heat as a by-product of its black-box "thinking," and air at 40° (F.) must be circulated around its electronics compartment to cool it before launch.

Surveyor's main retro-engine (which, after Atlas-Centaur has raced the spacecraft to speeds of 17,800 mph, must ease Surveyor to a feather-light lunar landing) must be carefully nursed to maintain its temperature between 80 and 90° in an earth environment.

Surveyor's electronics and vernier subsystem impose still different thermal requirements.

Test objective was a comprehensive engineering evaluation of both airborne and ground components on the system to determine its ability to meet Surveyor's pre-launch thermal demands. This was accomplished under conditions simulating the extremes of hot days and cold nights at the Florida launch site.

For the environmental tests, GD/Astro (under contract to NASA's Lewis Research Center) provided equipment to meet Surveyor's temperature and humidity requirements, while Hughes as-

sumed responsibility for cooling the Centaur electronics compartment.

(At AMR's Complex 36A and 36B, Centaur launch sites, all air conditioning will be furnished by GD/Astro.)

A Surveyor-type nose fairing, spacecraft adapter assembly, Centaur forward bulkhead mock-up and Surveyor handling equipment plus the air conditioning unit were provided for the tests by GD/Astro. Hughes furnished a Surveyor model, thermally representative of the flight vehicle, and test units were mated and installed in a Hughes-built environmental chamber at El Segundo.

The original test series was completed well ahead of schedule, with remaining time used for additional testing to correct a problem noted in the basic series.

"The GD/Astro-Hughes team wrote 'mission accomplished' for the entire project on the target date, Oct. 30," said Bob Benzwi, chief of payload integration—Centaur. "Personnel from both organizations operated as a team throughout the program, sharing ideas, manpower and equipment."

Al DuDeck, Dept. 952-3, was GD/Astro project engineer for the tests.

Working at Hughes were Test Conductor Tom Fitzpatrick, Dept. 974-4; J. Hofman, S. A. Nilsson, W. A. Wilkerson and M. P. Cole, Dept. 972 technicians; and H. L. Stouse, Dept. 957-2.

Design of the air conditioning unit supplied by GD/Astro was executed by Ching Yang of Centaur hydraulic and pneumatic engineering (Dept. 986-2). The prototype unit has been returned from El Segundo for upgrading and future use at the NASA Combined Systems Test Stand to be built adjacent to GD/Astro's San Diego main plant (General Dynamics NEWS, Sept. 4, 1963).

## Next GD/NEWS Issue Will Be Dated Jan. 2

The next issue of General Dynamics NEWS will be on the stands three weeks from tomorrow, Jan. 2.

The usual two-week interval between publication dates is being extended due to the year-end holidays. California divisions will shut down Dec. 23, 24 and 25, and Jan. 1.

## Space Society Recognizes GD

A General Dynamics/Astronautics man, Ray Crowell, Dept. 362-1, was installed as national president of National Society of Aerospace Professionals Dec. 5, as the organization honored his company for its role in Project Mercury.

NSAP this year selected the Mercury "man in space" program as recipient of the John J. Montgomery Project Award for outstanding contribution to aerospace achievement.

Key figures from major agencies associated with the program were honored at a banquet last week in San Diego's El Cortez Hotel.

Cited as representative of their organization's efforts were NASA officials Dr. Robert R. Gilruth, Dr. Walter C. Williams, K. S. Kleinknecht, Christopher S. Kraft Jr., M. A. Faget, Dr. C. A. Berry and Lt. Col. John Powers, plus the seven Mercury astronauts.

GD/Astro was represented by President J. R. Dempsey (C. S. Ames, vice president—space launch vehicles, attended the banquet in his behalf); K. J. Bossart, technical director; and B. G. MacNabb, director of test engineering.

GD/Electronics-San Diego, which provided the Operations Room for Project Mercury, was represented by Arch H. Wisdom, manager of research and engineering for GD/E data products.

The Montgomery Award is presented jointly by NSAP and San Diego Aerospace Museum, as a tribute to all who contributed to the success of the selected project.



PICTURE HISTORY — Martin Miller, assistant supervisor, watches photographer Robert Herrmann stack old prints as thousands of pictures tracing development of products are consolidated at GD/Convair photo lab to compile 181-volume print file.

## Better Advance Planning Urged To Conquer Logistics Problems

Industry and government must define and plan in greater detail logistics support to be required for a program during the development, acquisition and operational phases.

This opinion was expressed by E. D. Bryant, General Dynamics/Astronautics vice president—operations, recently before a Joint Technical Conference in Anaheim sponsored by top national technical societies.

In his talk, "Industry Looks at the Modern Logistics Problem," Bryant called for a common understanding between contractor and contracting agency to begin early in the proposal-development stage and to be integrated throughout the program.



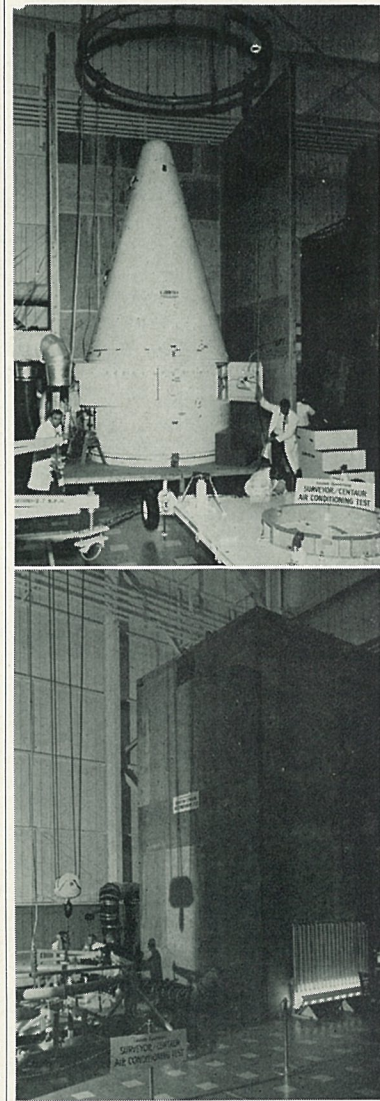
E. D. Bryant

Bryant advocated longer retention of contractor personnel in the operational phase of each program, stressing the availability of "know-how" as a means of shortening down time for maintenance, improving provisioning through direct lines to contractor facilities and further means of "on-the-job" training via a person-to-person approach.

Looking to the future, Bryant called for more descriptive, more accurate and more sophisticated technical data.

"The space stations of tomorrow can not have room for today's 'libraries' of data, but must rely on computerized signals which produce images from central 'libraries' on earth," Bryant said. "We should start refining technical data techniques now!"

Bryant also pointed out that direct-line spares support is needed to link the user and the contractor to insure maximum combat readiness.



SURVEYOR TEST—In top photo Surveyor-Centaur test vehicles are positioned in environmental test chamber at Hughes Aircraft, El Segundo. GD/Astro technicians are M. P. Cole, S. A. Nilsson, J. Hofman. In lower picture, with vehicles sealed inside, test continues through night (time 2:35 a.m.) with GD/Astro Test Conductor Tom Fitzpatrick and Hughes' H. Eggbert and R. King keeping vigil.—Hughes photos.